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ART. I.—*Observations on the Treatment of Spina Bifida.* By AMASA TROWBRIDGE, M.D., Professor of Surgery in Willoughby University, Ohio.

IN the Western Journal for May, I noticed some suggestions in relation to a new and different mode of treating Spina Bifida from those heretofore practised, which induce me to make this communication. Much observation and practice in this disease have convinced me, that it is important for surgeons to possess a correct pathological knowledge of the nature and formation of these tumours before they attempt their cure, or adopt any mode which may be suggested or practised for that object.

In 1829, I reported in the Boston Medical and Surgical Journal, (Vol. 1, No. 48,) three cases of spina bifida cured by operations. The cases with the modes of proceeding with each, were particularly detailed. In two of the cases, the tumours were removed by ligature, and in one by incision. I remarked in that communication, that I preferred the ligature in all cases where the base of the tumour admitted of its application—applied in the first place tight enough to produce moderate inflammation; after this the patient did not suffer as much in bringing it so tight, as to destroy all circulation, and its sympathetic effects were much diminished. I further remarked, that in making that communication public, I did not wish it to be understood, that I believed that all cases of spina bifida could be cured by any mode of treatment. I knew there were many that would soon destroy the child, and some that proved fatal even at their very birth, by being torn off in that process. Three cases of the latter I had witnessed. I also stated that I had seen about thirty cases, and had seen them situated upon every portion of the vertebral column, from the occipital bone to the sacrum, of various sizes and appearances, and had made many attempts to relieve the unhappy sufferers from their embarrassments, by puncture, compression, ligature, incision, et cætera, and that I had failed in my attempts in many instances; but that after all, I believed there were cases that could be cured, and that the surgeon, if he made the necessary distinction in the cases, might venture with as much assurance of success as he could in other maladies that required operations.

It is generally supposed that all cases are alike—that there is a communication from the sac, or outer cavity, through the spinal canal to the brain; but this is not the fact. There are cases where the opening through the vertebræ does not ex-

tend far into the canal, and where the spinal marrow is not compressed by fluid, or deranged in its functions; and many of these cases may be cured by surgical interference.

The external tumour in these cases, is generally covered entirely with integuments, and appears very firm, is not easily compressed, very elastic to the touch, and yet fluctuation is perceptible. In this case, the dura mater is the only lining membrane of the cavity in the tumour, and the fluid contained in this does not extend far in the canal after passing the aperture in the spinous apophyses. In the other cases, and these are much the most frequent, there is a thin, almost transparent membranous covering on many parts of the tumour, and sometimes on the greatest portion of it. The tumour is easily compressed, and the subject is generally attended with loss of voluntary action in some of the muscles, and sometimes with derangement in the secretions. Here the fluid is contained in the cavity of the arachnoid membrane, and may extend the whole length of the canal; and M. Bichat and other anatomists assert that it can extend even to the lateral ventricles of the brain. I have seen cases where the head was enlarged in a manner similar to what takes place in cases of hydrocephalus. These cases will soon prove fatal under any treatment that I have seen adopted. Since I reported the cases referred to in the Boston Journal, another has passed under my treatment, equally interesting, which goes to establish my views about these cases.

Miss M. Brayton of Jefferson county, New York, of a very respectable family, aged 25, was born with a tumour over the two lower lumbar vertebræ of considerable size and protuberance, which was pronounced by several medical gentlemen of eminence to be spina bifida. It was so large and so distinctly characterized at this time, that they predicted the child

would live but a few weeks. She however continued to live in this state without much constitutional derangement or local suffering, except feebleness, during the first twelve years. The tumour enlarged in proportion to the growth of other parts of her body. From this period to the time when I first saw her, at the age of 25, she was occasionally troubled with extreme pain in the cerebral region of the head, and much disturbance of mind, attended with a vertigo and confusion of mental powers, and some neuralgic symptoms over the whole body. She was of the phlegmatic temperament and possessed a mind that was retiring and delicate. The secretions of the system were natural, and no delay was experienced in the usual infantile developments, either physical or mental. She was of the middling stature, and had the perfect use of all the muscles of the body. A family physician attended her during the paroxysms of pain and nervous excitement mentioned, but was ignorant of the real cause of these symptoms. He treated by bleeding, cathartics, opium, et cætera.

The tumour enlarged and the symptoms were continued till I was consulted in her case. The tumour was fifteen inches in circumference, covering the upper portion of the sacrum and four of the lumbar vertebræ, of a conical form, rising about seven inches, covered with integuments, and distended with fluid. She had managed by adjusting her clothes so as to keep the deformity from being much noticed. While riding in a carriage she was injured and put in pain by having the tumour pressed against the seats, and always afterwards suffered with the symptoms mentioned. Walking or whatever exercise fatigued her much, uniformly produced lassitude and nervous excitement. She had suffered from the great enlargement and the concussion of the tumour for several months anterior to my seeing her, more than at any pre-

vious period. Indeed she was reduced to a state of constant danger and distress. I advised an operation, which was made by dividing the upper portion of the tumour with a scalpel about five inches, encircling the prominent portion of integuments within two elliptical incisions. Twenty-two ounces of fluid were discharged, carrying the appearance of the purest alcohol. On standing till cold, it had no appearance of serum or lymph, but was more like distilled water. These incisions, and the removal of parts, exposed the interior and bottom of the tumour. It was lined with the dura mater distended and enlarged with the fluid mentioned, two of the lower spinous processes were wanting; a cavity was presented, and the spinal cord, in its natural position, and covered with the pia mater, was perceptible.

The divided parts were brought together by adhesive strips, and compresses being laid on a bandage was applied. She suffered but little by the operation, except the former symptoms from concussion; these were great for a few minutes. There was a constant secretion and discharge of fluid, from the parts for the first five days, with neuralgic symptoms, and increased arterial excitement, which were mitigated by large doses of morphia and warm fomentations, over the spine. The suppurative process took place freely about the tenth day, and a union of the parts followed, with a mitigation of all the symptoms. A sound state of the parts, with a depression of the integuments over the deranged portion of the spine, followed, and she has enjoyed good health up to this time, which is eight years. This tumour carried with it from the birth of the individual the appearance of those which I have described as curable. If my conclusions are correct, these "cysts," as "D." terms them, have secreting surfaces, and would not be

likely to unite with a coagulum, or fibrine, deposited within the sac. Would the coagulum adhere, without inflammation, to the surrounding tissues?

Painsville, Ohio, July, 1840.

ART. 11.—*Remarks on Scarlet Fever, as it occurred in Calloway Co., Ky., in* 1838. By DR. W. SCOTT LAWRIE, of Ky.

IN the following article I shall not attempt a labored dissertation on scarlet fever, but shall endeavor briefly to describe the symptoms and mode of treatment pursued during its prevalence in the county of Calloway, Kentucky, in the spring and early part of the summer of 1838. The winter had been unusually severe, and it was early in the spring that this formidable disease commenced its ravages. Its appearance created much alarm, the general impression that it was contagious pervading almost every family; and in some instances so great was the dread of spreading it, that the assistance so necessary among neighbors in times of sickness, was most inhumanly withheld, and a case or two occurred where barely sufficient force could be mustered to pay the last sad offices to the dead.

No disease with which I am conversant, is more appropriately named than "Scarlet Fever," a solitary symptom serving at once to develope its character. Its presence was variously intimated, at times being ushered in by rigors or slight chills, with redness of the eyes, pain in the head, heat, redness, and dryness of the skin, and difficulty of respiration; while again the *rash* itself, though not generally appearing

until between the third and fifth day, was the first symptom manifested. In some other cases, soreness of throat was the symptom first complained of; and again, fever, redness of the eyes, the peculiar appearance and elevation of the papillæ of the tongue, resembling the seed of the strawberry, (a diagnostic in the cases of both black and white patients,) cough, wheezing, with a rattling of mucus in the throat, and redness and swelling of the fauces, were the symptoms which presented, in others.

These are the symptoms which usually came under my notice. The indications which they suggest are, first to abate the violence of the fever, and, secondly, to promote the cutaneous afflux or centrifugal tendency, scarlet fever, like all other eruptive diseases, being safest when it comes fully out upon the skin. Upon being called to a case in the commencement of an attack, and finding the usual symptoms attendant, particularly heat and redness of skin, with headache and difficult respiration, I endeavored to meet the first indication by abstracting blood freely from the arm, and in such a quantity as to satisfy me, that an impression had been made upon the symptoms manifested. Bloodletting as a remedy in scarlatina, I am aware, is not sanctioned by some of the profession, while by others it is as much extolled. Dr. McIntosh states, that for a good while he was opposed to it, but that upon finding so many of his cases snatched from an untimely grave, by *a spontaneous bleeding* from the nose, he determined upon a change of treatment; and at the time of his death he was an advocate for v. s. in this disease. So clear an indication of nature was not lost upon such a man as Dr. McIntosh.

The soreness and rattling in the throat, and the hurried and laborious respiration, would at once proclaim the propriety and necessity of an emetic, and, more particularly, should

the cutaneous afflux be tardy in its appearance. Emetics, from their peculiar mode of operation, having a direct tendency to the skin, are very essential in the treatment of scarlatina, while cathartics, in their nature, are the reverse. An emetic in the onset, according to my experience, is the most effectual step towards cutting short the disease, and I am inclined to give the preference to tartar emetic over all the other articles of this class. In all the cases which have fallen under my care, I have used this remedy, and in only two have I seen it run off by the bowels, the objection urged against it, and in these, it failed to vomit altogether. In one instance only have I administered ipecac, and then, combined with calomel, it answered remarkably well. In the same family in which I gave it, I had six other patients all of whom took the antimonial and recovered.

To an abuse of any medicine I am opposed, and to none more than that of calomel as a purgative in scarlatina. Cathartics, I have stated, have no cutaneous tendency, and calomel least of all, being a permanent irritant of the mucous membrane of the alimentary canal, and reducing during the time of its operation the functions of the skin, which are in an inverse ratio to the peristaltic action.—In this disease the bowels are frequently sluggish and torpid, and that they should be opened, there can be no doubt; but that they should be moved by calomel is by no means certain. A majority of cases, in my opinion, will be as well, if not better managed without calomel, Epsom salts, and calcined magnesia, or rhubarb and magnesia, having with me done admirably well.

When the heat and dryness of skin continue after the stomach and bowels have been operated on, and the eruption is still tardy, or appears but partially, I have been much aided by the warm bath, either by immersion, or by pouring water

from a vessel upon the body. Even sponging the body with warm water is of much benefit. The bath better than almost any other measure allays that restlessness so often attendant, and puts an end to the irritation of the skin, while at the same time it reduces the excessive temperature, promotes perspiration, and adds much to the comfort of the sufferer.

Cataplasms have also aided me much in the management of scarlet fever. A poultice of light-bread and milk, with the addition of cayenne pepper, has been usually employed. The temperature of the body is in many cases very unequally distributed, that of the abdomen being often preternatural, and in such instances a poultice covering the entire bowels will be found highly beneficial.

The testimony concerning vesication in this disease is conflicting. My own experience is favorable to it. In three or four cases, at least, I am confident that I obtained much advantage from the use of blisters; and I am not sure, that to them alone three of my patients are not indebted for their lives. In two of them, deglutition seemed impossible, and any liquid taken into the mouth was at once ejected through the nostrils. To the first I was called in much haste about 10 o'clock, P. M. The subject was a remarkably stout and healthy young woman, who had been for a few days convalescent, and had on that day been unfortunately exposed to a light shower of rain. I found her in extreme distress; her pulse full and bounding, skin hot and dry; much disturbance about the head, throat painful, and a good deal swollen. My efforts at v. s. failed entirely—the light was a bad one, and the patient being very fleshy, after two or three ineffectual attempts I abandoned it. Tartar emetic was forthwith administered, half a grain every fifteen minutes, but failed to induce emesis, the irritability of the bowels being such that

it passed off that way. The effect of the watery stools thus procured was to exhaust the patient. The affection of the throat seemed rather to increase, and a poultice of light-bread and milk was prepared and applied as hot as could well be borne. From this some relief was obtained, and as she was kept in a state of nausea by a preparation of squill, and vin. antimon. combined with paregoric, some improvement was observable. The bowels had been acted upon by gentle cathartics, and I thought she was about to recover, when upon calling on the evening of the fourth day, I found her worse than ever. The poultices had been steadily continued, yet still the pain and swelling of the fauces, and the difficulty of deglutition were worse, and my apprehensions for her safety were much excited. A large blistering plaster was applied to the throat, and a strong decoction of cayenne pepper prepared, of which she was prevailed upon to drink freely, and under this plan of treatment, with due attention to the bowels, her health was restored. While in this, and some other cases, I am of opinion that vesication was productive of good, I am by no means prepared to say, that the practice should be generally adopted; on the contrary I look upon the cataplasms as safer, and as free from the objections so justly entertained against blisters. In my practice the epispastic has usually been employed after poultices and sinapisms had failed to secure the desired ends; and while I admit a doubt as to the general utility of vesication in this fever, I would unhesitatingly employ blisters, and risk gangrene, and the whole host of evils to which they are supposed to be accessary, before I would lose my patient without making the experiment.

Gargles I believe may be omitted. The cayenne pepper so prepared as to be comfortably swallowed, is a valuable adjuvant in the treatment of scarlatina, of which I have made

much use, and which I can safely recommend. That the dryness of the skin should be obviated is very desirable, and this I have generally been able to effect by the use of the cayenne, and a preparation of vin. antimon., spt. nit. dulc., and paregoric, giving the pepper tea without limit, and, of the other, a teaspoonfull every hour, unless it acted too freely upon the stomach, in which case the time was prolonged.

Thus I have communicated the treatment pursued by me in the scarlet fever of Calloway county, and I may state, as the result, that out of some fifty cases thrown directly upon my hands, I lost but two, where the course of cure was begun by myself. Many received directions whose cases I never saw and were relieved; while others, laboring under the impression from having observed the great fatality of the disease elsewhere, that but little could be done by medical treatment, made no application for aid, until help was beyond reach, and thus cases were lost, two and three in a family, which by timely and judicious aid might have been saved.

The subjects of the fatal cases to which I have alluded were stout, robust children, one of them my own, whose sufferings were most intense, and upon whom no effort of mine made any impression. The brain became most deeply involved, and a heavy coma supervened, out of which I was unable to arouse her. The death of the other, from the peculiar formation of the child, I predicted while it was yet in health, should it become the subject of the disease. Every practitioner must have observed, that children of robust forms, short necks, and large heads, are the least likely to recover from scarlet fever.

The congestive form of scarlatina is not of very common occurrence, and out of the entire number of my cases, I am not sure that more than two were of that character. In one

of these, the eruption never did fully appear. The child was sick some time before I saw it, was finally thrown upon the hands of another practitioner and lost, he with myself having failed in any manner to aid it. My experience in this form of the disease having been so limited I shall not pretend to speak of the best mode of treatment, but would simply remark, that while in inflammatory scarlatina I have dispensed with calomel, I should regard it as the most valuable remedy in cases of a congestive type.

In two instances I have met with a feature in this disease, that I have not seen described, which it may not be amiss to mention here. These patients were both convalescent, and one of them was able to leave the bed. They were taken with violent spasms of the forearm and hands; the contractions were very strong, and the suffering most excruciating and obstinate, not readily yielding to the means exhibited for its alleviation.

June, 1840.

ART. III.—*A case of Fracture of the Cranium, with wound of the Dura Mater and loss of Brain.* By A. H. BUCHANAN, M.D., of Columbia, Tennessee.

ON the 27th of August 1824, a boy aged 8 years, was found in a horse lot apparently lifeless, with a deep wound in the left temple, extending from the anterior part of the ear to the external corner of the eye. It was supposed, that he had been kicked on the head by one of the horses in the lot. I saw him about six hours after the accident, and upon examination found the temporal muscle greatly lacerated and bruised,

and entirely cut through, down to the subjacent bone; and discovered in the wound several small portions of brain. The left eye was much injected with blood, and the eye-lids were swollen and livid, and the pupils widely dilated. The pulse was full and slow, and the patient slightly comatose. Upon dilating the wound with the scalpel, I found the anterior inferior angle of the parietal bone, and the adjoining portions of the temporal and frontal bones, to the size of half a dollar, fractured and depressed. The dura mater was pierced by a spicula of bone, and several portions of brain, about the size of a pea, were perceived lying on its surface. The cheek bone where it unites with the zygomatic process of the temporal bone, was also fractured and depressed. The portions of cranium which were depressed being entirely loose, were removed by a pair of forceps; which left exposed the wounded dura mater, the middle artery of which now bled freely, but soon ceased without any application. The cheek bone being properly adjusted, the lips of the wound were brought together by three stitches, and by adhesive strips; a compress was placed upon the wound and retained by a bandage drawn firmly about the head.

The boy complained but very little during the operation—being during the greater part of the time in a state of stupor. After he was put to bed he remained in a comatose condition for two days, with full, slow pulse, about 60 in the minute, and pupils dilated; but during this time, if roused up he recognised his acquaintances, and was sensible to all external impressions. He was bled freely, on the second day, and purged with Epsom salts; during the following night he complained at times, of some pain in the wound. Suspecting that the pressure from the compress and bandage might be too great, it was diminished a little, and in the morning on rais-

ing a corner of the adhesive strips at the lower end of the wound, a free discharge of pus took place. The pulse being full and slow he was again bled, and also purged with salts. The accumulation of pus in the wound occasionally produced some pain, but when he complained it was always evacuated, which relieved him. From this time, by keeping the bowels open with salts or oil, and restricting him to the lightest of diet, he gradually recovered, and in four weeks was walking about the house. No untoward symptom occurred afterwards.

The boy, I suppose, lost about half an ounce of brain, which as far as I could discover did not seem to affect his intellectual faculties, and his father is of opinion, that his mind is not injured. His mother, however, is quite sure, that his memory is not so good as before the accident. The case I consider worthy of reporting, because it gives additional evidence to the cases already on record, that a wound of the dura mater, with loss of brain, is not necessarily fatal, nor always followed by fungus cerebri. It is highly probable that the firm support maintained by the compress and bandage, in this case, during the cure, and even for several weeks after the external wound had healed, was the most efficient remedy in preventing the fungous growth so apt to occur under such circumstances.

July, 1840.

ART. IV.—*A Case of Chronic Enlargement of the Spleen, with Remarks.* By RICHARD R. DASHIELL, M. D., of Tennessee.

THE case which I am about to relate is one of not very unfrequent occurrence in this State. I allude to the chronic enlargement of the spleen, succeeding an attack of intermittent fever.

Elizabeth Harris, æt. 36, was subject to periodical attacks of ague and fever for fifteen years, and upon the cessation of this disease, about six years ago, she complained of pain in the left hypochondrium, which extended to her back; from which time the spleen increased in size until it has attained its present dimensions. She has been pregnant five times, and at the last accouchement gave birth to twins, from which time the pain in her left side increased. When I first saw her, she had that peculiar hue of skin which often follows tedious intermittents, and which those who have seen it will always recognise. This color is easily distinguished from the hue of slight jaundice—it is what is usually termed a clay-colour. She had cough, general debility, loss of appetite, pain in the head and back, periodical blindness, vertigo, constipation, loss of sleep, sometimes for a week at a time; her catamenial discharge was irregular, being frequently merely a show, and then entirely suppressed. She had no fever; pulse was rather slow and regular; her belly enormously tumefied. Upon first inspection, I accused her of being pregnant, which imputation she resented warmly, as she had been separated from her husband for six years. On a more minute manipulation, I found that the abdominal tumefaction did not depend upon the presence of a fœtus in utero, or of

fluid in the peritoneum, but was produced by enlargement of the spleen, and was a case of what is vulgarly called 'Ague Cake.' The tumour was remarkable for its dimensions, occupying more than one-half of the abdominal cavity, and extending to the spine of the ilium. Judging from the impression it gave through the integuments, it must have been three or four inches thick. At one time she describes it as having been as large as "a clever sized watermelon."

As there was tenderness upon pressure, I applied three cups over the splenic region, and recommended a light diet, in addition to which, I directed a blue pill every other night. The pills were continued until the tenderness was removed, when I inserted two setons, which produced rapid diminution of the enlargement, and a perfect cure, so far as the spleen was concerned.—With respect to tonics, I found them of great service. I used a 'decoction of the woods,' with supertartrate of iron. They no doubt gave vigor to the constitution, which had been impaired by long ill health, and tended to promote the absorption of the morbid products, on which the elargement chiefly depends.

In conclusion, I would offer the suggestion, whether the reason why enlargements of this viscus from *sanguineous engorgement* are not more frequently cured, is, that they are confounded with enlargements arising from *inflammatory action*, which have resisted all the means of treatment devised for their cure by the 'masters of the healing art.' The latter, or enlargements arising from inflammatory action, are generally hard to the touch, and are always more or less painful—on manipulation they present the feeling of *induration*, though sometimes only in spots, particularly in the inferior and left lateral portions, the right being free from any appreciable lesion. On the contrary, enlarge-

ments arising from sanguineous engorgement, have a soft, spongy, elastic feeling, during the absence of febrile excitement, whilst during the progress of the fever they impress us with the sense of *distension*, and not of hardness.

Chronic indurations of the spleen have resisted every plan of treatment. Iodine and mercury used in every form, have been alike unsuccessful. Temporary relief only has been afforded by cupping or leeching, low diet, change of residence, mineral-water bathings, keeping the bowels free, and wearing the tartar emetic plaster over the left hypochondrium. On the other hand, *chronic enlargements* of the spleen are capable of reduction by adopting a hygienic course of living, by strengthening the system by the exhibition of tonics, by an alterative course of mercury, and finally, by the use of the seton. It is this condition of the spleen alone that yields to a judicious treatment, while all others remain the opprobria of our art.

July, 1840.

ART. V.—*Observations on Milk-Sickness.* By JOHN TRAVIS, M. D., of Carroll County, Tennessee.

Whenever a new disease occurs among mankind or the inferior animals, and its remote cause cannot be clearly demonstrated, the floodgates of imagination are thrown open, from which thousands of conjectures flow, some of which are of the most absurd and ridiculous character. Such was the case on the appearance of Asiatic cholera. It is the duty of the physician to examine, to write and to think of diseases,

in a *rational* manner. It ill comports with the character of medical science in this enlightened age, to trace the origin of diseases to the influence of the sun, the moon, and the stars. I have as much faith in the judicial astrology of the Romans, or Hesiod's theory of the origin of the world, as I have in such notions.

That milk-sickness exists in certain localities, I cannot for a moment entertain a doubt. It has made its appearance annually in Carroll county, and some of the adjacent ones, since the first settlement of the Western District of Tennessee. Many instances of death among horned cattle have occurred in this county, and dogs feeding upon their dead carcases have become diseased, and some have died. My own dogs have had the disease in such a manner as to render them unable to walk, by feeding on a dead cow. Several persons of this vicinity have had the disease, and some have died of it. They have had the whole train of symptoms described by Professor Yandell in his essay on milk-sickness, in the Transylvania Journal of Medicine, vol. 1, No. 3. I have invariably pursued the course of practice suggested in that essay, in the management of the cases that have come under my care.

The great concern of the physician is to obviate the constipation that exists, which is often of the most obstinate character, and with the removal of which the nausea, vomiting, and other distressing symptoms generally yield. Whether the relief from cathartics be owing to the removal of the poison of milk-sickness from the primæ viæ, or to the restoration of the alvine secretions, is a matter not yet decided among practitioners, but of the efficacy of these remedies in the disease, no one who has had experience in it entertains a doubt. Venesection in the early stage is useful, not only in calming the symptoms, but in promoting the operation of

the cathartic. The gastric irritation continuing after the use of the lancet and purgatives, a large blister is applied to the epigastrium. Sinapisms to the extremities are beneficial in equalizing excitement, and affusions of cold water answer a similar purpose when much heat of the surface is present. In a word, the treatment does not differ materially from that pursued in bilious fever, except that constipation being a more prominent symptom will require more attention. That being obviated, the disease in most cases becomes sufficiently manageable.

It may not be uninteresting to state a remarkable fact which has occurred under my own observation; it is, that my own cattle range with those of my neighbors, and have done so for five years, and none of them have ever had the disease, while many of theirs have died. I am strongly inclined to believe, that this exemption is owing to my giving my cattle salt every other day, during the spring, summer and autumnal months, whereas other cattle get salt perhaps once a month. From this fact it would appear, that the muriate of soda, (common salt,) acts as a prophylactic of the disease.

A range of hills of considerable elevation runs up from near my mills on Sandy river, westward, between which are fertile valleys. In these ravines cattle often range, and, it appears, also contract this disease. In these valleys abounds the Rhus radicans, upon which cattle sometimes feed. From certain experiments made, some years ago, by a gentleman near Cincinnati, there appears some reason to believe, that a small poison vine, a species of the *Rhus*, will cause milk-sickness. He had a number of cattle in a lot, in the winter season, where the vine grew; he observed them to eat of the vine, contract the disease, and die. He removed the vines and put other cattle in the same lot, which escaped the dis-

ease. This is the fairest experiment that I have ever known made, and it certainly should have considerable bearing upon this interesting and obscure subject. I intend at an early period to make experiments with the poison vine growing in this region, and will communicate the result to the Editors of the Western Journal.

I am aware, that great discrepancy exists among physicians respecting milk-sickness, some even denying its existence, *in toto*, and others deeming it nothing more than a form of *congestive fever*. It certainly bears a remote resemblance to congestive fever; but by certain diagnostic symptoms, pointed out in the essay to which I have referred, the discriminating physician can never be at a loss to distinguish one disease from the other. The remote cause of milk-sickness being buried in obscurity has no doubt induced many to question its existence. Such persons might as well doubt that man has a spleen, because the most acute anatomists have not yet discovered its use.

July 11*th*, 1840.

REVIEWS.

ART. V.—*Crania Americana; or a comparative view of the Skulls of various Aboriginal nations of North and South America: To which is prefixed an Essay on the Varieties of the Human Species. Illustrated by seventy-eight plates, and a colored map.* By SAMUEL GEORGE MORTON, M.D., Professor of Anatomy in the Medical Department of Pennsylvania College at Philadelphia; member of the Academy of Natural Sciences of Philadelphia; of the American Philosophical Society; of the Historical Society of Pennsylvania; of the Boston Society of Natural History, &c., &c., Philadelphia; J. Dobson, Chesnut street. London; Lumpkin, Marshall & Co., 1839. Letter press, p. 296, folio.

In the last number of the Journal a promise was given, that, on renewing our remarks on this distinguished work, which, though the production of an individual, might well be called NATIONAL, we should endeavour to enrich our notice of it, with a greater amount of the special and detailed information which it contains, than was introduced into our former article respecting it. And our promise must be redeemed. In effecting this redemption however, it is not our intention to deal exclusively in specialties and details. We shall not lose sight of those great principles of science, nor fail occasionally to refer to them, which constitute an essential element of liberal knowledge, and without which *science* would deservedly forfeit its name and character, and degenerate into disjointed and common-place intelligence.

In a special manner we shall not fail to bear in mind that fundamental and all-controlling truth in physiology, whose influence and value have been heretofore too little attended to, and too lightly appreciated, especially by anthropologists—that the *nervous* is the *master-tissue* of living organized matter, and that that portion of it called *the brain* is chiefly instrumental in creating distinctions between human individuals, as well as between varieties and races of men; and in giving to some of them a decided and permanent superiority over others. For, as intimated on a former occasion, that truth, when skilfully and ably employed, is calculated, far beyond any other, to shed light on the history and philosophy of man. Nor is its influence limited to the past and the present. To a certain extent it is also instinct with a spirit of foresight, and fitted to lift the curtain suspended in most cases between mankind and the future, and disclose to them somewhat of the destiny that awaits them.

Our reason for entertaining this opinion, which we know will not be likely to be favoured, at first view, with the belief of the *multitude*, may be succinctly stated. We can foresee what man would be, were he converted, by a well-conducted and thorough course of education and discipline, into a truly *rational* and *moral* being—were all his *higher* and *nobler faculties* we mean, so strengthened and trained, as to have the complete control of his inferior faculties, and his will so predominant as to have a corresponding mastery over *them*. And we can foresee what the condition of the world would be, were it peopled with beings so elevated and excellent. But were time allowed us, and were the discussion a suitable one for the present occasion, it would be easy to show, that a complete knowledge of the brain and nerves, and of the best scheme of exercising and improving them, would enable

mankind to produce in the world the state and condition of things, to which we have alluded. And that such knowledge and scheme, in no very limited degree, will be, in time to come, one of tne products of phrenology, is highly probable. The future then, under such circumstances, is in part at least revealed to them. Though they have not obtained possession of the land of promise, they enjoy an antepast of it in prospect from the Pisgah they have ascended.

Such a view of things cannot, we think, be regarded as either fanciful or extravagant. Far from it. Founded on acknowledged truth, and constructed of sound materials, it cannot be otherwise than substantial and lasting. But we must proceed, without further preface, to our task of analysis.

In our article contained in the preceding number of this Journal, it was observed that Dr. Morton commences his work with an "Essay on the Varieties of the Human Species." And, for its extent, it is decidedly the most interesting and instructive we have ever perused. It contains the result of much and varied reading and research; its matter, though compressed within the narrowest limits, is rendered perfectly intelligible, by the simplicity, plainness, and perspicuity of the style; and, added to its historical information, it is interspersed with many striking and valuable remarks.

Alluding to the extensive, if not *universal* population of the earth, at the earliest epoch known to history, the writer correctly states, that "the *oldest records* seldom allude to an *uninhabited* country." Yet do some of those "records" go back to within a few centuries of the flood, and still find populous, powerful, and even cultivated nations. Indeed, according to our most accredited systems of chronology, within a single century and a year after the subsidence of the deluge, the east was sufficiently populous, and the inhabitants suffi-

ciently versed in the mechanical arts to erect the tower of Babel—a building believed to be superior in magnitude, and vastly superior in grandeur of design, to any architectural monument subsequently attempted. In about twenty-six years afterwards the Chaldean monarchy was founded by Nimrod—and in fourteen years more the Chinese monarchy, by some of the master spirits of the time. These facts bespeak an increase of the human family, at that period, far surpassing in rapidity any thing the world exhibits at present.

Dr. Morton farther states, with equal correctness, and as an evidence of great *antiquity* of residence, that so strong is the attachment of each variety and people to their own dwelling places, that they greatly prefer them to all others. "Thus, says he the Eskimaux, surrounded by an atmosphere that *freezes mercury*, rejoices in his snowy deserts, and has pined in unhappiness when removed to more genial climes. On the other hand, the native of the torrid regions of Africa, oppressed by a vertical sun, and delirious with thirst, thinks no part of the world so desirable and delightful as his own." So truly might the poet have sung of the predilection for home inherent in the inhabitants of every region, whether hot or cold, parched or humid, as he did of that which he represented to be so vivid and glowing in those who are born and reared amid polar snows, and immediately beneath the path of the sun.

"The shuddering tenant of the frigid zone,
"Boldly proclaims the *happiest home* his own,
"Extols the treasures of his stormy seas,
"And his long nights of revelry and ease;
"The naked negro, panting at the line,
"Boasts of his golden sands, and palmy wine;
"Basks in the glare, or stems the tepid wave,
"And thanks his gods for all the good they gave."

Again says our author; "From remote ages" (he might have said the *most remote*) "the inhabitants of every extended locality have been marked by certain physical and moral peculiarities, common among themselves, and serving to distinguish them from all other people. The Arabians are at this time precisely what they were in the days of the patriarchs; the Hindoos have altered in nothing, since they were described by the earliest writers; nor have three thousand years" (he might have extended the period to three thousand *five hundred*) "made any difference in the skin and hair (and he might have added *features*) of the Negro. In like manner the characteristic features of the Jews may be recognized in the sculpture of the temples of Laxor and Karrak, in Egypt, where they have been depicted for nearly thirty centuries."

Throughout this whole passage, the writer has restrained himself not a little *within* the limits to which he might in verity have carried his account of the stubborn permanency of the human complexion, features, and figure. Documents not to be controverted can be adduced to show, that *six-and-thirty hundred* years ago, the Jews in Egypt bore, in every characteristic trait of person and countenance, the most striking and precise resemblance to the Jews of the present day. Neither their residence in Palestine, nor their subsequent banishment and dispersion into every climate, situation, and country, has produced in either their personal figure, the form of their head, the colour of their skin, or the lineaments of their countenance any well-marked or even perceptible change. All these facts, and many others that might be easily detailed, speak to the same effect. And they testify conclusively to the immense antiquity of the crowded population of the earth, and the absolute impossibility of specifying any

natural causes, physical, moral, or intellectual, capable of producing the numerous, immense, and dissimilar alterations in man, requisite to change and diversify him from *unity of origin* into the now-existing and strongly-marked varieties and races. And all attempts to that effect have not only failed to do good, by the discovery of truth in history or science, but have done positive mischief, by giving a wider scope and deeper inveteracy to error and prejudice. For the sake of religion therefore, as well as morality, unsophisticated reason, and sound philosophy, researches of the kind should be discountenanced and abandoned. No natural causes now in existence have the slightest tendency to change one race of men into another—or even *one variety of the same race into another*. All efforts made to propagate hypothesis in opposition to this, do violence to truth, and give countenance to error—and are therefore necessarily of pernicious tendency. For error of every description is a positive and never-failing source of evil. Nor are these remarks designed to have the slightest bearing on the doctrine of the *original unity of man*. They relate exclusively to the *causes of his diversification*. And we reiterate our thorough conviction, that nothing short of the POWER which created him could have produced the change.

To render his readers the more familiar with the climates and localities of the different races and varieties of man, Dr. Morton has prefixed to his work a well prepared map of the earth, indicating by different shades of colour, the places of dwelling of the several races.

The effect of an examination of this map is singular, and exhibits in the most striking and forcible light the vast superiority of the Caucasian race in every thing but numbers—

their superiority especially in science, literature, and the arts, power and government; and in every thing else subservient to the comforts of peace, the operations of war, and the elegance and elevation of condition and standing.

The Caucasians are in all respects the masters of the world, though they do not we believe constitute a fifth part of its inhabitants, nor cover perhaps more than one-eighth or tenth part of its surface. It is curious, as well as instructive, in a special manner, to compare the diminutive size of Great Britain, with the measureless dimensions of the nations and territories she has conquered and sways. She occupies on the map we have referred to but little more than a mere *speck* of space, which those who know not its position have difficulty in finding; while her fleets cover every sea and ocean, her arms are almost uniformly and every where triumphant, and her power is felt in every corner of the peopled globe. Nor can even the inferior animals in the north, the tropics, or the south, and whether they wing the air, cleave the waters, or move on solid ground, escape either by flight, concealment, or resistance, the devices of her artfulness, the snares of her hand, or the unlimited sweep and mightiness of her arm. And what is the source of this power and influence? We reply unhesitatingly the functions of the brain—of the largest, best developed, and best conditioned brain belonging to man. And if this brain be accompanied by bodies of the best size and shape, and the most adroit and vigorous in action, let it not be forgotten that brain and nerves, being the master tissue of the system, have no little concern as well in the production of those excellencies of quality and endowment, in other portions of the body, as in their superintendence, maintenance, and regulation when produced. For that the brain,

when of the highest order and in the best condition, imparts to the other tissues and organs of the body, somewhat of the tone and character of its own distinguished qualities, is as certain as that moisture and sunlight, warmth and atmospherical air, co-operating with each other in a well-adjusted union, contribute to the growth and excellence of vegetables.

In a word, Great Britain is peopled chiefly by Anglo-Saxons, the most highly endowed variety of the Caucasian race. Their brains are superior in size, and more perfect in figure than the brains of any other variety; and, from temperament and exercise, they are in the best condition. In function therefore they are the *most powerful* at least, if not the most *active*. And hence the surpassing strength and grandeur at home, and the influence and sway over the other nations of the earth, of those who possess them. The vast and astonishing productions of art in Great Britain, her boundless resources of comfort and enjoyment in peace, and her unequalled means of defence and annoyance in war, are as literally the growth of the brains of her inhabitants, as her oaks, and elms, and ash-trees are of her soil. We shall only add, that the inhabitants of the United States, being also of the best Caucasian stock, and youthful, elastic, and vigorous, as a nation, and enjoying the influence of other circumstances as favorable to the production and perfection of mental and corporeal excellencies as nature can frame, or imagination conceive — in the midst and under the immediate agency of such advantages, the people of the United States promise to be even more than the Britons of future ages.

Having finished his history and geography of the other races of men, our author commences his exposition of the American race. And in this enterprise lie, as was designed to be the case, the chief interest and value of his book.

In the beginning of this exposition he very properly notices a phenomenon which, if not peculiar to the American race, is more strongly marked in them, than in any other people. It is the striking similarity, both physical and moral, very especially in complexion, countenance, and hair, which attaches to them *as a whole.* True; they have their varieties; tribes and communities of them permanently differing in sundry respects from each other. But the differences are not so prominent as those which characterize the varieties of other races. They are much less striking, for example, than the differences which exist betwen real Negroes, Caffres, Hottentots, and Boschesemen—between Arabs, Persians, Hindoos, and Circassians—or even between Germans, Italians and Irish.

When a nation composed of the same people is of great extent from north to south, as is the case with China and Hindostan, Arabia and the United States, the inhabitants of the two extremes differ very percepibly from each other in complexion and figure. The natives of the North are comparatively fair and ruddy, full in flesh, broad in frame, and bulky in proportion to their height. Of the natives of the South, the reverse is true. They are darker in complexion, rather taller, slenderer in frame, and less muscular and weighty in person. This truth is illustrated and confirmed by the appearance of the House of Representatives of the Congress of the United States. When the House is full, a practised eye can readily discriminate, by their complexion and figure, between the members from the northern, middle, and southern States.

Among the aborigines of our country, this phenomenon, so uniform elsewhere, does not present itself—at least not so strikingly or to the same extent. Of the American continent the extent from north to south is considerably greater, than

that of the three continents of the Old World—the southern extreme of the New World being many degrees to the south of the Cape of Good Hope. To this amount of latitude add the influence of its mountains and high table-land, broad plains and prairies, and deep and extensive vallies, and the New World possesses necessarily a greater diversity of climate than the Old. From this unequalled diversity of climate and situation at least, if not also of other physical causes, we might well feel authorized to expect a correspondingly greater diversity of complexion and countenance among its aboriginal inhabitants. But the reverse of this is true. The complexional diversity is greatly inferior. From the confines of Labrador to the heights of Cape Horne, and from the Atlantic to the Pacific ocean, the complexion of the Indian is nearly the same. So is the general physiognomy, with the whole physical appearance and character; and so in a high degree are the moral qualities. Neither latitude nor elevation of dwelling; the freedom and purity of mountain air; the fogs and stagnant atmosphere of vallies; the deep shades of primeval forests; nor the unmitigated and unaverted blaze of sunbeams descending on prairies, produce on the aspect of the roving and houseless native, any very strongly marked, or permanent effect. In the north and south, as well as in the torrid belt of the Equator, and on the mountain, the hill, and the plain, the deep valley, and the interminable prairie, his complexion, figure, and features remain nearly the same. Or if any material difference exist, it is found only among the natives of Mexico and Peru. More singular still. So little influence has latitude and temperature on the complexion of the American Indian, that it is, in many instances, darker in tribes inhabiting cold and temperate regions, and residing on cool and breezy mountains, than it is in the inhabitants of the

ill-ventilated and sultry vallies at their feet, and of the still more burning regions of the Torrid Zone. The well known fact, that amidst the scorching heats of equatorial America, there are found neither real Negroes, nor any thing resembling them, while that race abound in the much milder climates of Oceanica, and elsewhere without the Tropics—that fact alone affords ample and conclusive proof, that *mere temperature*, whether high or low, and whether it be accompanied by moisture or dryness, takes no part in the production of the Ethiopian complexion or hair, features or figure. Indeed the entire history of the aborigines of America, is a sound and overwhelming body of evidence in refutation of the *temperature and climate hypothesis*, which is but the ricketty offspring of ignorance and prejudice; and the nurseling of error, superstition and obstinacy.

Notwithstanding however the similitude, in complexion, of the different varieties and tribes of the American race, the differences in the size and configuration of their heads is sufficiently striking. And in the judicious and accurate exposition of that topic, consists the highest excellence of the work we are examining. Of the differences in the form, though most of them are natural, yet not a few are the product of art. The latter are effected by pressure applied to the heads of children, from birth, until the skull is sufficiently ossified, to retain the flattened or elongated form it has received—for either form is given, according to the taste of the nation or tribe. Those Indians whose crania are most odiously disfigured by this process, are the Charibs, the Natchez, a variety of the race believed to be extinct, the ancient Peruvians, those whose skulls are extracted from the ancient tumuli of the country, and sundry tribes resident on the Columbia river, and scattered along the shores of the Pacific

ocean. Most of the tribes and nations between the base of the Rocky Mountains and the Atlantic ocean, allow their heads to retain, unmolested, the form that nature gives them. It is worthy of remark, that in whatever degree the shape of the skull may be changed by pressure, its size is but little if at all affected by it. The cavities of the most deformed skulls are found to be as capacious, as the cavities of those allowed to preserve their natural figures.

Nor has it been indisputably ascertained that either intellect or health, strenth or longevity, or any other important attribute of mind or body, is materially injured by the pressure and disfiguration of the brain. Completely to solve this problem, however, additional observation and research are essential—observation and research moreover especially directed to the points in question—a measure which we believe has not yet been pursued. As far as our own *suspicion* may avail, we deem it hardly possible that pressure so severe and long-continued as greatly and permanently to derange the shape of the brain, can be practised with impunity. We can hardly doubt, that most feeble children are destroyed by the process; and that the more robust and vigorous ones only survive it. Those tribes and nations, moreover, who now practise it, are in general less elegantly proportioned in their limbs, less masculine and powerful in their persons, and less expert and formidable in war, than those who decline it, and suffer their heads to take their natural shape. Hence the Indians on the west side of the Rocky Mountains are inferior in strength and bodily activity, less warlike, and less dangerous to hunters, trappers, and traders, than those on the east side of them. The real causes of these differences however are yet to be disclosed. They *may* be the presure and disfiguration of the brain alone; they may embrace that combined

with other agencies—or it is even *possible* that the compression may have no influence in the matter. As relates to the process of giving an artificial shape to the head, we shall only add, that Dr. Morton possesses a model of the machine, by which it is effected; and that he has inserted a description, accompanied by an accurate engraving of it in his book. There exists therefore no longer any doubt of the *reality* of the process; whereas, with not a few persons, such doubt, until recently, *did* exist. We speak from *experience;* because, by ourselves, the point has been seriously questioned. And should we even be told that it has been pronounced by us "a mistake"—"a fiction"—and "a traveller's tale"—we should be compelled perhaps, in honesty, to plead "guilty" to the charge. It is worthy of remark, that the altered form of the head is not *hereditary*, but terminates with the individual, and is, in every case, an artificial production. Every infant, therefore, in tribes where the disfiguration is fashionable, is compelled to submit to the torturing process. Such at least is our author's opinion on the subject. From this, if true, the inference may be safely drawn, that flat-headedness does not become *constitutional;* because every constitutional quality is known to be transmissible from parents to their offspring.

Before entering on the representation and formal exposition of their "Crania," our author offers some interesting remarks on the *Stature* of the American race.

"That race," to use his own language, "presents some remarkable contrasts. The Patagonians" (of which the Araucanians are the most distinguished branch) "are the tallest nation on the American continent. Of five hundred of them seen together by Commodore Byron, the shortest were at least *four inches* taller than his own men. Capt. Wallace took the pains to measure many of them, among whom one was six feet seven, and several six feet five; but the greater part of them were from five feet ten, to six feet. On the other

hand, Humboldt found the Chaymas, and some other tribes of the upper Orinoco to be remarkably short. The Pourys and Coroados of Brazil are diminutive races, while the Albipones of Paraguay are, to a man of gigantic proportions. The Muscogee (Creeks) are strikingly tall and athletic—a full size larger than the Europeans. Many nations also both of North and South America are remarkable for the perfect symmetry of their persons." In these, and other facts, as the writer very justly observes, "there is ample evidence to disprove the hypothesis of some closet naturalists, that the physical man of the New World is of defective and degenerate organization."

In farther testimony of this latter truth, it might be added, that, be the cause what it may, the Anglo-Saxon stock of the Caucasian race acquire in America (especially in the United States) a loftier stature than they possess in Great Britain. Hence the American sons of English and Irishmen are usually taller than their sires; and the military step is ordered to be a little longer in the former than in the latter country. Give to the Aborigines of the New World, then, a nervous system in perfect equality, as regards excellence in size, form, temperament, and condition, with the other portions of their organization, and they will rival at least, if they do not surpass the leading variety of the Caucasian race. But in brain, by which alone elevated and efficient standing and character can be attained and preserved, they are deficient. And hence their inferiority. But we must proceed in our analysis.

Those elements of Dr. Morton's labours, from which can be formed the most just and accurate view of the drift and usefulness of the work, are his numerous delineations and admeasurements of skulls. In his delineations he represents the differences of those skulls *in form*, and in his admeasurements their difference *in size*, with a correctness and exactitude neither equalled nor even aimed at, as far as our information reaches, by any other writer. Of the interest and value of

his delineations no satisfactory knowledge can be conveyed by us to the reader, except by a lithograph or an engraved presentation of his plates, which cannot, of course, be given in this article. That information can be acquired only by an examination of his book. From a brief account however of the details of his admeasurements, some conception can be formed of their utility and importance. And that account shall be offered in the writer's own words.

"*Anatomical Measurements.*

"These measurements are derived from one hundred and forty-seven skulls of American Indians, of forty different nations and tribes; and the crania are all of adult persons, and unaltered by art. * * * It is necessary to premise the manner in which the measurements have been taken.

"The *longitudinal diameter*" (of the skull) "is measured from the most prominent part of the os frontis, between the superciliary ridges, to the extreme end of the occiput.

"The *parietal diameter* is measured between the most distant points of the parietal bones, which are, for the most part, the protuberances of these bones.

"The *frontal diameter* is taken between the anterior inferior angles of the parietal bones.

"The *vertical diameter* is measured from the fossa between the condyles of the occipital bones to the top of the skull.

"The *inter-mastoid arch* is measured, with a graduated tape, from the point of one mastoid process to the other, over the external table of the skull.

"The *inter-mastoid line* is the distance, in a straight line, between the points of the mastoid processes.

"The *occipito-frontal arch* is measured by a tape over the surface of the cranium, from the posterior margin of the foramen magnum, to the suture which connects the os frontis with the bones of the nose.

"The *horizontal periphery* is measured by passing a tape around the cranium, so as to touch the os frontis immediately above the superciliary ridges, and the most prominent part of the occipital bone.

"The *length of the head and face* is measured from the

margin of the upper jaw, to the most distant point of the occiput.

"The *zygomatic diameter* is the distance, in a right line, between the most prominent points of the zygoma.

"The *facial angle* is ascertained by an instrument of ingenious construction," &c.

The author's entire description of this instrument it would be useless to insert; because, unless it were accompanied by an engraving, it could not be understood. It must therefore give place to intelligible matter.

From this account of Dr. Morton's measurements, the osteologist will perceive their fitness to give the dimensions of the cranium to be sufficiently perfect for the purposes aimed at. As appears to us, they are wanting in nothing. And the execution of them we believe to have been equally unexceptionable. When to these again is added the measurement of the internal capacity of the skull, both as *a whole*, and as divided into its several regions, in the character of sub-cavities or chambers, every thing is done, as respects the ascertainment of dimension and figure, that can be desired or devised. The whole moreover is well calculated to supply the mental philosopher with the data necessary to enable him to calculate the amount, both proportional and abstract, of intellect, morals, and animality, and therefore of general character, belonging either to individual man, or to races of men, and their subordinate divisions. The real results and usefulness of the writer's measurements can be learnt and appreciated only from specifications of them. Some of them are as follows:

"PLATE V.—ANCIENT PERUVIAN.

"*Measurements.*

"Longitudinal diameter, - -	6.7 inches.
Parietal diameter, - - -	4.5 "
Frontal diameter, - - -	4.1 "
Vertical diameter, - - -	4.1 "
Inter-mastoid arch, - - -	11.5 "
Inter-mastoid line, - - -	3.6 "
Occipito-frontal arch, - - -	14.2 "
Horizontal periphery, - - -	18 "
Extreme length of head and face,	8.8 "
Internal capacity, - - -	65.5 cubic inches.
Capacity of anterior chamber, -	19.75 " "
Capacity of the posterior chamber,	45.75 " "
Capacity of the coronal region, -	12.75 " "
Facial angle, - - - - -	61 degrees."

This cranium, though small, may be received as a fair specimen of the average size of the ancient Peruvian head. Compared to the animal portion of the brain, the intellectual and moral portions are small. It is believed however that the shape of the skull is not natural, but has been altered by pressure.

"THE INCA PERUVIANS.

"PLATE IX.—PERUVIAN FROM THE TEMPLE OF THE SUN.

"A strikingly characteristic Peruvian head, for which I am indebted to Dr. Ruschemberger. As is common in this series of skulls, the parietal and longitudinal diameters are nearly the same.

"*Measurements.*

"Longitudinal diameter,	6.1	inches.
Parietal diameter,	6.	"
Frontal diameter,	4.7	"
Vertical diameter,	5.5	"
Inter-mastoid arch,	16.	"
Inter-mastoid line,	4.5	"
Occipito-frontal arch,	14.1	"
Horizontal periphery,	19.5	"
Internal capacity,	83	cubic inches.
Capacity of the anterior chamber,	33.5	" "
Capacity of the posterior chamber,	49.5	" "
Capacity of the coronal region,	15.75	" "
Facial angle,	81	degrees."

The reader will perceive that this Inca or modern Peruvian skull is much larger and better proportioned than the preceding ancient one. It is indicative therefore of having belonged to a superior stock of men—a stock well calculated to prove victors and conquerors, in warfare with the others. And such we doubt not they did prove. They invaded the ancient Peruvians, and banished, enslaved, or exterminated them—most probably the latter. Such, we feel persuaded, is always and necessarily the case, as regards the *permanent* conquest and overthrow of nations. The conquerors have the larger and better proportioned brains.

The reverse of this we apprehend is never true. In no instance does a people, with smaller and worse developed brains, achieve the *permanent* conquest of a people endowed with larger and better ones. True; the Moors, an inferior caste of the Caucasian race, conquered a large portion of Spain, and held possession of it for centuries, though peopled by Caucasians of a higher order. But they were ultimately conquered in turn, by their superiors in cerebral endowment, and banished from the country. Nor is it at all probable, that any

event, in the revolutions of time, will ever recall them to Granada and the Alhambra.

"PLATE XVII.—MEXICAN.

"*Measurements.*

"Longitudinal diameter,	6.8 inches.
Parietal diameter,	5.5 "
Frontal diameter,	4.6 "
Vertical diameter,	6. "
Inter-mastoid arch,	15.6 "
Inter-mastoid line,	4.4 "
Occipito-frontal arch,	14.6 "
Horizontal periphery,	19.9 "
Internal capacity,	89.5 "
Capacity of anterior chamber,	33.5 "
Capacity of posterior chamber,	56. cubic inches.
Capacity of coronal region,	19.5 " "
Facial angle,	80. degrees."

This head, superior to the Peruvian, is believed to be also above the *average* of the Mexican head.

"PLATE XXIII—SEMINOLE.

"*Measurements.*

"Longitudinal diameter,	7.1 inches.
Parietal diameter,	5.6 "
Frontal diameter,	4.7 "
Vertical diameter,	5.5 "
Inter-mastoid arch,	15. "
Inter-mastoid line,	4.1 "
Occipito-frontal arch,	14.8 "
Horizontal periphery,	20.3 "
Internal capacity,	89. cubic inches.
Capacity of the anterior chamber,	52. " "

Capacity of the posterior chamber, - 37½ cubic inches.
Capacity of the coronal region, - 19½ " "
Facial angle, - - - - 78 degrees."

This, being probably about an average standard of the national head is indicative of no common capacity, and shows the Seminoles to be a well endowed variety of the American race. No wonder that, in a country like Florida, abounding in countless and impenetrable places of defence, concealment and annoyance, the conquest of them should be difficult. In the capacities of the anterior and posterior chambers we suspect some mistake.

Without giving their measurements, we shall merely mention that the skulls of the Creeks and Cherokees are of the same order with those of the Seminoles. And their history testifies that those two nations also are warlike and formidable. And the heads of the Chippeways, another nation similar in character, are fully equal, if not superior. So are the heads of the Miamis and Potowatomies—nations that have been obstinate and destructive in war. Of the "five nations" the same is true. Their brains as well as the history of their wars, show them to possess a high station in the American race.

The Osage alone we believe excepted, the Indians west of the Mississippi and east of the Rocky Mountains, are of an inferior order. This appears from the following measurements, which may be regarded as giving about the average (or rather a little more) of the skulls of those nations. Some of them however are fearfully ferocious and sanguinary.

"PLATE XL.—BLACKFOOT.

"*Measurements.*

"Longitudinal diameter,	7.1	inches.
Parietal diameter,	5.4	"
Frontal diameter,	4.3	"
Vertical diameter,	5.1	"
Inter-mastoid arch,	13.8	"
Inter-mastoid line,	4.3	"
Occipito-frontal arch,	14.	"
Horizontal periphery,	19.9	"
Internal capacity,	77	cubic inches.
Capacity of the anterior chamber,	33½	" "
Capacity of the posterior chamber,	44½	" "
Capacity of the coronal region,	18.2	" "
Facial angle,	78	degrees."

"THE FLAT-HEAD TRIBES OF THE COLUMBIA RIVER."

In one respect these Indians may be pronounced an *anomaly;* yet the singular problem they present is susceptible we think of a rational solution. Though their brains are of fair and respectable size, they are, in their qualities and efficiency, a very inferior branch of the American Race. Of all the higher qualities of that Race they appear to be destitute. "They are commonly," says our author, on the authority of Lewis and Clark, "of diminutive stature, badly shaped, and their appearance by no means prepossessing. They have broad, thick, flat feet, thick ancles, and crooked legs." * * * * "The legs of the females particularly are ill shaped and swollen." This unsightly condition of the legs and ancles is attributed by some (though we think erroneously) to "tight bandages of beads and strings, worn round the ancles by the women, which prevent the circulation of

the blood," and thus produce the preternatural bulk and clumsiness of the limbs. This cannot be received as correct physiology. The blood nourishes and vitalizes the organs which it visits. Let its circulation in them be "prevented," and they will become *smaller* instead of larger, for want of nourishment; or disease will invade them, and run into ulceration, if not into gangrene. By the well known action of the bandage, when tight, this is conclusively proved. To some other cause therefore must this thickness and shapeless clumsiness of the limbs be ascribed.

It is hardly we think to be doubted, that the general inferiority of the "Flat-head" Indians is attributable to the injury inflicted by compression on the brain. Were that compression made on the stomach, heart or lungs, no one will doubt that serious mischief would be the certain issue. Hence the well-known disasters of the practice of corsetting, in the production of dyspepsia, pulmonary consumption, disease of the heart, and other grievous and often fatal affections.

But the brain is an organ equal at least in standing and importance to any of the thoracic or abdominal viscera. We have pronounced it in many respects superior, and still maintain the same belief. Through the medium of the spinal cord and nerves, its influence is transmitted with great and essential effect, to every portion, we might say, directly or indirectly, to every fibre of the system. That it therefore can be compressed and distorted, if not literally *dislocated*, with greater impunity than other organs in no respect its superior, but decidedly the reverse, is exceedingly improbable—not to employ a stronger term, and say *impossible*. The "Flat-heads" are palpably of the same race with the great body of the North American Indians east of the Rocky Mountains. They are also fed as plentifully, clothed as well,

and lodged as comfortably, and occupy a climate as pleasant and salubrious. Still are they comparatively of a degenerate caste. For their personal inferiority then to the other tribes of their family, no adequate cause presents itself *from without.* Yet some general and powerful cause of inferiority in them exists. That that cause is *internal* therefore, there is no ground to deny, and but little, in our estimation, to doubt. And we perceive nothing more likely to produce the mischief, than the violence done indirectly to the whole system, by the compression of the brain. And that no deterioration of intellect results from such compression, it requires more credulity than we possess to believe, or deem possible. In our opinion, a more incredible position can hardly be put or even imagined. The process is but little less in character than an infantile *chronic apoplexy*—or a fracture and long-continued depression of the skull. The marvel is, not that such violence done to the brain should seriously derange the functions of that viscus; but that it does not produce fatuity or death. The following are the dimensions of the cranium of a "Flat-head" of the largest size.

"PLATE XLV.—KILLEMOOK.

"*Measurements.*

"Longitudinal diameter,	6.9	inches.
Parietal diameter,	6.3	"
Frontal diameter,	4.9	"
Vertical diameter,	4.8	"
Inter-mastoid arch,	15.7	"
Inter-mastoid line,	4	"
Occipito-frontal arch,	14	"
Horizontal periphery,	21	"
Extreme length of the head and face,	8.5	"
Internal capacity,	92	cubic inches.
Capacity of the anterior chamber,	34	" "

Capacity of the posterior chamber,	58	" "
Capacity of the coronal region, -	19.3	" "
Facial angle, - - - -	73	degrees."

This is the largest but two of all the posterior chambers of the skull, that Dr. Morton has measured. It testifies of course to the inordinate animality in the savage who possessed it. But on these points, full of interest and instruction as they are, we can dwell no longer, but must hasten toward the close of our review.

Having terminated his measurements and calculations, after toiling through a degree of industry, patience, and labor that, without exaggeration, may be pronounced stupendous, Dr. Morton thus expresses himself, in the language of one who is emboldened by a consciousness of having faithfully endeavored to acquit himself of his duty.

" In conclusion, the author is of the opinion that the facts contained in this work tend to sustain the following propositions:

" 1st. That the American Race differs essentially from all others, not excepting the Mongolian; nor do the feeble analogies of language, and the more obvious ones in civil and religious institutions and the arts, denote any thing beyond casual or colonial communication with the Asiatic nations; and even these analogies may perhaps be accounted for, as Humboldt has suggested, in the mere coincidence arising from similar wants and impulses in nations inhabiting similar latitudes.

" 2d. That the American nations, excepting the Polar tribes, are of one Race and one species, but of two great Families, which resemble each other in physical, but differ in intellectual character.

" 3d. That the cranial remains discovered in the mounds, from Peru to Wisconsin, belong to the same race, and probably to the Toltecan family."

Having laid down these propositions, in the form of corollaries deduced from the body of the work, our author offers, on the comparative size of the brains of the five races of men of whom he had treated, the following interesting and important

observations. The facts they embrace are the result of admeasurements; and, as far as they extend, they put at rest the question of the relative magnitude of the Caucasian brain. We feel persuaded that, as soon as they shall be made known to him, even Tiedemann himself and his stubborn adherents, hostile as they are to the doctrines of phrenology, will cease to contend that the brain of the African is equal in size to that of the Caucasian. With equal truth may they contend for identity in the colour of the skin, the figure of the nose, and the entire character of the lips and hair of the two Races. Never were the blindness and deceptiveness of professional prejudice more doggedly manifested. The following are the observations to which we allude.

NOTE.—*On the Internal capacity of the Cranium in the different Races of men.*—Having subjected the skulls in my possession, and such also as I could obtain from my friends, to the internal capacity measurement already described, I have obtained the following results. The mean of the American Race (omitting a fraction) is repeated here merely to complete the table. The skulls of idiots and of persons under age were of course rejected.

Races.	No of Skulls.	Mean internal capacity in cubic inches.	Largest in the series.	Smallest in do.
Caucasian,	52	87	109	75
Mongolian,	10	83	93	69
Malay,	18	81	89	64
American,	147	80	100	60
Ethiopian,	29	78	94	65

"1. The Caucasians were, with a single exception, derived from the lowest and least educated class of society. It is proper however to mention that but three Hindoos are admitted in the whole number, because the skulls of these people are probably smaller than those of any other existing nation. For example seventeen Hindoo heads give a mean of but *seventy-five* cubic inches."

After a few farther remarks on the Caucasians, Mongolians, Malays, and Ethiopians, which it is not important for us to quote, Dr. Morton subjoins:

"5. Respecting the American Race, I have nothing to add, excepting the striking fact, that, of all the American nations the Peruvians had the smallest heads, while those of the Mexicans were something larger, and those of the barbarous tribes the largest of all, viz:

"Toltecan nations.	Peruvians collectively,	76 cubic inches.
	Mexicans collectively,	79 "
Barbarous tribes as per table,		82 "

"An interesting question remains to be solved, viz: the relative proportion of brain in the anterior and posterior chambers of the skull in the different races; an inquiry for which I have hitherto possessed neither sufficient leisure, nor adequate materials."

As connected with this question, and tending toward a solution of it, the following statement is worthy of notice.

On comparing with each other an American and a Caucasian brain, very nearly equal in size, and each being in form about an average of its race, the size of the three lobes was materially different.

In the Caucasian brain, the front lobe, which is the seat of intellect, was much larger than in the American, and its convolutions considerably bolder and more prominent.

In the American brain, the middle lobe, the seat of the animal and the semi-animal propensities, was in an equal degree larger than in the Caucasian, and its convolutions deeper.

And in the Caucasian brain, the posterior lobe, the seat of the domestic and social affections, was much larger, and more strongly marked in its convolutions than in the American.

These facts are in beautiful correspondence with the well-known differences in the characters of the two races. The Caucasian is superior, according to the indication of his brain, in the intellectual, social, and domestic faculties, and the American in the animal and semi-animal. C. C.

ART. VI.—*Elements of Pathological Anatomy, illustrated by numerous engravings.* "In Morbis, sive acutis, sive chronicis, viget occultum, per humanas speculationes incomprehensible." Baglivi. By SAMUEL D. GROSS, M.D. Late professor of General Anatomy, Physiology, and Pathological Anatomy, in the Medical Department of the Cincinnati College. Vol. II, 8vo., Boston, 1839. Marsh, Capen, Lyon & Webb and James B. Dow.

MANY of our brethren must well remember the time, when the only work on Morbid Anatomy within their reach, was the little volume of 250 pages, from the pen of Dr. Matthew Baillie of London, re-printed in Albany in 1795. It was altogether *special.* Since that date, such has been the progress of this new department, that the *general* has been added to the special—systems have been formed, and a new branch of science created. Previously, however, to the re-publication in this country, of Andral's celebrated "Treatise on Pathological Anatomy," eight years ago, the American student had but meagre opportunities for the prosecution of this most interesting and useful study. The advancement which has been made since that work appeared, may be inferred from the fact, that several medical schools have been enriched with professorships of Morbid Anatomy, and, still more, from the fact now before us, that a physician of our own country—a practitioner of the west—has brought out a well-digested work of equal extent, and greater simplicity than Andral's, which, we learn, is every where well received by the profession.

The eminent French pathologist attempted to present the facts of this science, by a method that would disclose the origin of the morbid appearances which he described. Thus he formed the great classes—lesions of circulation—of nutrition, of secretion, of innervation, and of the blood. It is certainly

advantageous to the student to contemplate them by the lights of this system, but we cannot admit that it is without difficulties. Thus it rarely, if ever, happens, that one of the great functions can be disordered, and the others remain unaffected; and in the majority of cases the lesion of structure is manifestly the result of irregularity in more than one of the functions. To select a simple case, the hypertrophy of an organ, although, immediately, the effect of an excessive energy of the nutritive function, is generally attended equally with an excess in its circulation. But to choose a stronger and more complicated example—in induration what do we observe? A chronic inflammation, (lesion of the *circulation*,) sustained no doubt by a lesion of the *innervation*, a lesion of the *blood*, indicated by its siziness, and a lesion of *secretion*, if not indeed of *nutrition*. To refer an indurated tissue to any one of these heads is then, evidently, an arbitrary decision.

Perceiving this difficulty, professor Carswell of London, one of the ablest pathological anatomists of the age, in his splendid and expensive "Illustrations of the Elementary Forms of Disease," (he should have said, of *deranged structure*,) determined to class the morbid appearances according to their affinities. Thus, to cite a single example, he brings together all the cases of *softening*, however diverse the lesions of function generating them; and then proceeds to enumerate those lesions. This is the plan adopted by professor Gross, and we think it decidedly preferable to that of Andral.

Nevertheless, whatever method of classification the pathological anatomist may adopt, he must always commence with inflammation; for it is undeniable, that of all the modes of morbid action, this one is most prolific in those results, which are the immediate objects of his study.

To this great truth our author is quite alive. Indeed, he

seems to favor the opinion, that *all* derangements of structure depend directly or indirectly on this kind of morbid action—more or less intense, and modified in its phenomena and effects, by the tissues in which it occurs, the nature of the remote cause, and the temperament of the patient. Thus he assigns the same proximate cause—inflammation, for the false membranes of the pleura, the tubercles of the lungs, the serum in hydropericardium, and scirrhous tumours—it being understood, however, that some of these inflammations are of a common kind—others specific. At the same time, he is a decided advocate for the doctrine, which teaches the local origin of *all* diseases, and the sympathetic origin of all constitutional affections. In this generalization, which reduces every morbid state to inflammation and constitutional disturbance, as its effect, there is certainly an attractive simplicity; but we are not yet fully prepared for its adoption. Used in this comprehensive sense, the word *inflammation* becomes nearly synonymous with the *morbid action* of our celebrated countryman Dr. Rush; which, in turn, is but an equivalent for disease—and these different forms of speech might indeed be indiscriminately employed.

A mode of morbid action is characterized, first, by the phenomena which it displays during its existence, second, by its effects. When both have been adequately observed, and are found to be constant, we admit, that occurrence of this mode in any particular case, may be established, either by the symptoms, or the morbid appearances, found after they have passed away. Whenever the well known phenomena of inflammation are present—or the appearances on examining a morbid structure are such as are known, at all times, to have been preceded by those phenomena, we must grant of course that the disease *is* inflammation. But we are not bound to grant,

when neither the symptoms nor the morbid products *known* to result from inflammation show themselves, that the disease was inflammatory. Thus, if we observe swelling, redness, pain and heat, or a majority of these conditions, in a part, we say that it is inflamed; and if we find deposits of pus, or of coagulable lymph, in the form of false membranes, in tissues which have ceased to be the seats of morbid action, we admit their inflammatory origin, because observation has taught us, that inflammation and it *only* produces them. When, however, we find serum, scirrhus or tubercle, in parts which have not emitted the symptoms of inflammation, and unassociated with false membranes or purulent secretion, it is gratuitous to affirm, that they are the offspring of inflammation. The existence of any one of them in any particular case, cannot, therefore, be cited as evidence of previous inflammation, until it is shown by testimony, that inflammation has in other cases produced it.

We grant that these, and other morbid products of a like kind, *may* be the offspring of inflammation, and it is due to the class of pathologists of which our author is one of the ablest, to admit, that they are not without facts of a weighty character to sustain their conclusion.

First.—The vast number of cases in which inflammation is the undoubted cause of morbid structure, would seem on the principles of analogy, to warrant the conclusion, that *all* morbid structures are its consequence. This however is but presumptive evidence.

Second.—Many inflammations it must be confessed, from the nature of the tissues in which they are seated, and from their mildness, give little pain and awaken but few constitutional sympathies; they may, therefore, exist to the extent of producing deranged structure, without manifesting them-

selves by the usual signs; and it cannot be said, that certain serous effusions and non-analogous deposits, are not of this kind. Thus tubercle may be secreted under such an inflammatory action. But here again is nothing more than probability.

Third.—It is affirmed, that many inflammatory congestions disappear, when the patient is *in articulo mortis*, or immediately after death. When we recollect, however, that the difficulty of washing or expressing the blood, from an inflamed tissue, is given as an evidence of the existence of previous inflammation, we cannot grant, that the number of cases of *resolution* at the close of life is as great as some pathologists believe. We *conjecture*, moreover, that it is in cases of short duration rather than chronic, that the inflamed capillaries thus unburthen themselves.

Fourth.—Almost all deranged structures, manifestly depend on deposits from the blood. Now inflammation, in all its stages, is known to favor effusion, and it may, therefore, be presumed to occasion all that we find. It is, however, an unquestionable fact, that we *may* have copious and altered secretion without inflammation. Blood is extravasated into the cutaneous or subcutaneous parts in scorbutus—the kidneys, and intestinal mucous membrane, secrete copiously an altered fluid under certain mental emotions, and the skin pours out freely in the very hour of death. There is no inflammation in any of these cases.

Fifth.—It may be, that certain heterologous matters, such as tubercle, melanosis and scirrhus, take the place of the ordinary lymphatic deposits afforded by common inflammation, which latter do not therefore appear. This must be granted; but the possibility of such an operation cannot be admitted as evidence of its actual occurrence.

Sixth.—An argument on which our author lays great stress is, that the deposit of lymph is one of the most characteristic effects of inflammation, and that a part at least of the heterologous structures, when analysed, are found to be nearly of the same composition. Some of them, however, are highly albuminous. Moreover, all deposits must be from the blood, and all which solidify must be composed in a great degree of the coagulating or, at least, the coagulable parts of that fluid. The source and material, then, of the analogous and the non-analogous deposits, must be the same; but it by no means follows, that the *mode* of action which produced the extravasation is the same, and to it our attention is now directed.

Seventh.—The heterologous deposits possess in themselves the power of generating blood and vessels to circulate it, which inosculate with those of the tissue into which the deposit has been made; a phenomenon identical with what we see in false membranes. This fact is entitled to grave consideration; but we cannot admit its conclusiveness; for, in the first place, it has not yet been *established*, that all of these productions possess this self-organizing power; and secondly, if they do, it would not prove that the *action* which extravasated the altered lymph that generally enters into their composition, was inflammatory. We do not know, but that other modes of morbid action may throw out lymph capable of generating blood and vessels. When this is shown to be impracticable the controversy will be at an end.

Lastly.—All the non-analogous structures, are sooner or later associated with inflammation in the surrounding tissues, and most of them present it in their own substance. But this association, established long after they were deposited, can throw no light on the mode of morbid action which occasioned their deposit.

Our limits do not permit us to extend the inquiry into this subject, which, at last, is of more interest in a pathological, than a therapeutic view; for if most of the cases in dispute are of such a *specific* inflammatory nature, as to afford results so different from those of common inflammation, we cannot expect to cure them by simple antiphlogistics; and, indeed, experience has taught us, that the deposit of tubercle, scirrhus, encephaloid and melanosis, cannot be arrested by the means which subdue ordinary inflammation. It is, then, to their peculiar or specific, not their inflammatory or non-inflammatory character, that we should turn our attention.

Having indicated one of the great principles which pervade the first part of Professor Gross' book, we shall with greater conciseness refer to another. Although adopting the division of morbid structures into analogous and heterologous, he distinctly intimates that there is not much foundation in nature for this division. This in fact is but a corollary from the other proposition, to-wit, their derivation from a common source, through the same instrumentality, inflammation. But apart from the last of these considerations, we do not perceive much propriety in this distinction.

All of them are derived from the blood, by morbid secretion; they are all disposed to become vascular, and all bear a resemblance to the normal tissues, while none of them is perhaps identical with any one of those tissues, except the cellular. It is true, that some of the abnormal approach much nearer to their natural prototypes, than others; but there is not one, which has not its analogue in the healthy structure. Thus, to use the words of our author, encephaloid bears a striking resemblance to the substance of the brain; melanosis to the coloring matter of the skin (in the negro;) scirrhus to the dermoid texture; and tubercle, at least in some of its

forms, to fibro-cartilage. We might extend these comparisons by a reference to the terms mammary, pancreatic, lardaceous, &c. employed by surgeons, to designate varieties of carcinoma, in its earlier stages, when the resemblances of structure are quite as great, as another variety bears to the brain, from which it has received the name encephaloid. Still further, softened tubercle resembles pus, classed it is true with the heterologous products, but presenting so many points of resemblance to mucus, that for ages the profession have exercised themselves on the means of distinguishing, in certain cases, one from the other. The calcareous masses found in the lungs, which in the opinion of Andral have taken the place of tubercles, resemble bone; and some urinary calculi have the same resemblance, while others are but the solidification of matters produced from the kidneys in their healthy condition, and some times found in the circulation.

Those products of morbid secretion, which bear the least resemblance to the tissues into which they are made, are most pernicious, and, at the same time, the most perishable, and vice versa. Thus tubercle, encephaloid and scirrhus, may be contrasted with melanosis, osseous concretions, many encysted tumours, and the false membranes, most of which injure by their mechanical action only; and are not liable to the decomposition, which, sooner or later, awaits those deposits which in their molecular constitution are further removed from the normal tissues. It is during this decomposition, the necessary result of their imperfect organization and vicious or low vital endowment, that the destruction of the tissues which constitute their matrices or beds, takes place; attended with such constitutional derangements, in both the solids and fluids, as very generally prove fatal. Two questions of deep importance to the practical physician are here suggested. First,

may we hope to discover how to prevent these deposits? Second, shall we ever acquire the means of protecting the organs and constitution against the destructive consequences of their decomposition—cause them, as it were, to slough away, and the original tissue to be replaced, or a substitute for it formed? We may, indeed, add to these another inquiry—will it be possible to keep these deposits from undergoing decomposition, still suffering them to remain, like encysted bullets, "in the flesh?" We shall not attempt to answer either of these questions.

Having indulged ourselves in these preliminary observations, on some of the first principles of pathological anatomy, we shall proceed to give a more detailed account of the work before us.

In the first chapter, Professor Gross, has presented a general view of the phenomena, causes and nature of inflammation; in which we find much to commend and but little to condemn. From page 23 we make the following extract:

"It has been already intimated, that diseases are functional or organic. As it is of the latter class that we shall more particularly treat in the following pages, it will be proper that we should speak of them somewhat at length. Before proceeding further, however, it behoves me to explain what I comprehend by the term organic. By pathological anatomists, the word is generally employed to denote some permanent change in the textures of an organ; but, in the sense that I would use it, I would not only include under it all such lesions, but also every temporary alteration which the tissues experience when in a state of disease. The term organic will then have a wider latitude; and, as expressing the same thing, we shall often have occasion to use the word structure. If this accetaption be adopted, it may perhaps be doubted whether, under any circumstances, there can, strictly speaking, be a functional disease, or, in other terms, a mere aberration of the physiological state of a part, without some change in its anatomical elements. The question, at all events is not settled.

"Bearing in mind the above definition, it may be assumed, as a general proposition, liable to few exceptions, that all organic diseases, whatever be their seat or extent, are the result of inflamma-

tory action, either of an acute or of a chronic kind. To many, this proposition may be startling; nevertheless, if it be carefully examined, it will be found, I doubt not, to be grounded on fact. The truth of this remark will appear more evident as we proceed."

The first of these paragraphs may present a great truth, but the evidences of it we confesss are not always conspicuous, though, from analogy, we feel almost warranted in the conclusion. The minuteness of the parts in which many morbid actions are seated, must forever render an observation on their appearance, in health or disease, extremely difficult; but we can scarcely conceive it possible, while all the anatomical elements—solid and fluid—continue precisely the same, in their relative quantities and positions, that an altered action can be established in it—we mean an action, that should vary from the natural except in degree. Still, the causes of disease are not necessarily mechanical, but agents which exert their influence on the contractility and sensibility of the tissues, and change their mode of action through the medium of those attributes or properties. Now we may suppose, that simultaneously with that change of action, there is a corresponding alteration of structure—not, it is true, of a *permanent* kind, for it may endure no longer than the morbid action itself, and may consist in nothing more than an increased or diminished quantity of blood in the part—a variation in the relative proportion of arterial and venous blood—and an augmentation or diminution of the interstitial secretion. In addition to these suppositions, we may, however, assume that the molecules of the tissues themselves undergo some change in their relative positions, for the *progress* of diseased action invariably presents us with softening, induration or transformation.

But while we concur with our learned author, in the belief,

that altered actions are probably always accompanied by altered organization (embracing in the latter term both the solids and fluids in due proportions,) we are not prepared to assent to his deduction from this proposition, that all diseases are necessarily inflammations; for we can readily conceive that many other modes of altered action and structure, than the inflammatory, *may* exist, and so change the nature of the products of nutrition and secretion, as to present pathological products of a determinate and permanent character. But having already discussed this subject to some extent we shall not enlarge upon it here.

In connexion with these remarks, we give another extract:

"The second proposition that may be stated is, that every inflammation, irritation, or morbid action, is originally of a local nature; that is to say, it makes its impression in the first instance always upon some particular part, texture, or organ. After this inflammation has continued for a longer or shorter period, it often happens that it extends to and implicates other structures. If the mucous membrane of the stomach, for instance, be fretted, the morbid action accruing from this cause will be confined at first to that lining; or, in more comprehensive terms, the disease will be strictly local in its character: by degrees, however, as the disorder progresses, the adjacent parts, such as the submucous cellular tissue, become affected; and, spreading still further, it next invades the muscular fibres of the organ, and, finally, the peritoneal covering. It is in this manner that most affections, which are originally local, extend their sphere of action, so as to become general, whether they be considered simply in reference to one organ, to several, or to a great number of them."

We should prefer the word partial to "local" in the beginning of this extract. The noxious agent which exerts its influence on the cutaneous surface of the body, or the internal parietes of the arterial system, cannot be said to act locally, though its action is but upon a *part* of the body. In his explanation of the extension of morbid actions through the system, our ingenious author does not display his usual perspicuity. He would seem to deduce the affection of *distant* or-

gans, from the same principle or mode of diffusion, by which a morbid action is transmitted from tissue to tissue in one organ. If this were the case, it strikes us, that a distant organ could not be reached, but through morbid action in *all* the intervening parts, as the skin becomes ultimately affected when a suppurative inflammation commencing in the substance of the liver, makes its way to the surface; or a caries becomes the cause of a circumscribed inflammation, progressively set up in all the tissues which lie over that part of the bone which is affected, until the skin is at last involved. These examples of propagation, although regarded by Hunter as sympathies, result, perhaps, from a kind of physical necessity, founded on the immediate anatomical relations of the tissues of the part; and ought not, it strikes us, to be referred to the same principle which causes an inflammation of the liver to excite a pain in the shoulder, or the other great principle, which makes it a fruitful source of morbid sensibility of the nervous system, by the impress on that system of the unexcreted elements of the bile. Our author in other parts of his book gives abundant evidence of a familiar acquaintance with these great principles, and, therefore, perhaps thought a reference to them in this place unnecessary.

"The time of life which seems to be most obnoxious to this disease, (inflammation,) is from the first to the tenth year, nearly one half of the entire mortality occurring during this interval. Affections of the cutaneous, mucous, and lymphatic systems, are particularly rife during this period, and carry off an immense number of children. Scarcely less common is inflammation of the arachnoid membrane. Pleuritis, pneumonitis, cerebritis, and hepatitis, with carditis, phlebitis, and arteritis, are comparatively frequent before the age of manhood; from thence on, however, they are by no means unusual, and prove a fruitful sourceof destruction. Diseases of the genital organs are rarely observed before the age of puberty; anterior to this period, these structures seem, indeed, in a great degree, to lie dormant in the system. Once roused into action, however, they deeply sympathize with the other viscera, and hence the

frequency of organic maladies of the uterus, the ovaries, breasts, and testicles, towards the decline of life. Affections of the urinary bladder are comparatively rare in the young, whilst they are very common in the old."

We commend the first part of this comprehensive paragraph to all our practical readers. The frequency of acute inflammatory affections in infancy and childhood, is much greater than many of us suppose.

The following extracts will be read with interest.

"The disease before us does not occur with equal frequency in all the organs and tissues of the body. There are some parts, in fact, in which it has been doubted, though, as I think, without any foundation in truth, whether this affection ever takes place. Such are the nails, the epidermis and the hairs. These structures are supposed, by general anatomists, to be destitute of vessels, and, therefore, incapable of performing any vital action. This however, is merely a conjecture; the fact remains to be proved, and, for my own part, I feel as certain that these textures are susceptible of inflammation, as that the liver is, the stomach, or any other organ.

"The cellular, mucous, serous, and dermoïd textures are particularly prone to inflammation. In children, this is different. In them, the cutaneous and mucous textures are infinitely more liable to inflammation than the cellular tissue and serous membranes—the frequency of their attack being, as nearly as can be, in the order here stated. It is here that the disease can be studied with the greatest advantage, both as it respects its phenomena and modes of termination, inasmuch as it is usually well marked, intense in degree, and rapid in its progress. The synovial membranes, the fibrous envelopes, the bones, ligaments, and cartilages, with the muscles and their tendons, inflame with difficulty; but when the disease has once fastened upon them, they readily yield to its influence, the sufferings are often excessively severe, and the consequences very serious. The blood-vessels, nerves, and absorbents, are all more or less liable to phlegmasia. The conservative powers of these structures, especially of the former, is remarkable, and is strikingly evinced in cases of gangrene, where, as will be shown hereafter, they frequently retain their vitality amidst the half putrefied mass.

"Of the organs, some are more ready to take on inflammation than others. Those which are most frequently affected, at least in this country, are the lungs, spleen, liver, uterus, and brain. The heart, ovaries, thyroïd body, pancreas, prostate gland, testicles, and kidneys, are comparatively rarely the seat of this disease."

The following are our author's views of the structure of the capillary vessels, in all cases the seats of inflammation:

"The walls of the capillaries, as may be imagined, must be extremely thin, delicate and transparent, otherwise it would be much easier to discern them. Bichat states that they are formed entirely out of the inner arterial and venous membrane, the other tunics being excluded, as he alleges, from their composition. An opinion precisely similar to this is advanced by Beclard. He asserts that the parietes of the capillaries are scarcely to be distinguished from the substance of the organs, in which they are situated, and thence draws the inference that they are rather formed out of this substance than that they possess walls of their own, acknowledging, however, at the same time, that it is not impossible that the internal tunic of these vessels is uninterruptedly continued from the arteries to the veins. Admitting, as we have already done, the utter impossibility of determining the precise point at which the arterial tubes in question terminate, and that at which the venous tubes commence, it would seem that the doctrine of the two French anatomists is entirely too exclusive in its bearings to entitle it to our confidence and regard. It is true, neither dissection nor microscopic observation can afford us much aid in solving the difficulty; for the vessels are altogether too minute to enable us to investigate their structure with any degree of accuracy; still, where these means fail us, we are warranted in going to analogy, and in availihg ourselves of its assistance.

"Taking it for granted that the privilege above alluded to properly belongs to us on the present occasion, let us extend our examination to other tubular structures, and see if we cannot find a more philosophical method of disposing of the question than that resorted to by the French anatomists. Let us take the excretory duct of the liver, and follow it along its ultimate ramification in the organ whose secreted fluids it is intended to carry off from the system. In the early part of its course it consists, plainly enough, of two tunics, which, as they extend into the substance of the viscus, become so excessively attenuated that it is quite impossible not only to separate them from each other, but even to distinguish them from the surrounding textures. Now that the inner membrane is prolonged as far as the very point at which the tube terminates, or rather where it takes its origin, no one can for a moment doubt, for the bile is a highly acrid fluid; and hence nature, in order to guard against suffering, has wisely furnished the canal with a mucous lining. But is it reasonable to presume that, because we can no longer discern the external tunic, it must necessarily be wanting? Is it not more philosophical to suppose that both membranes exist, than to say that one is preserved and the other lost? This conclusion involves nothing that is either absurd or improbable; and, although not founded on actual observation, it is much more in conformity with sound anatomy and physiology than any other that has been framed in relation to the subject. If, now, we apply this mode of reasoning to the capillaries, it will at once be perceived that the theory of

Bichat and Beclard is untenable; and that these vessels, instead of possessing, as they imagined, only one tunic, have precisely the same number as the arteries and veins, between which they are situated. If this idea be adopted, it follows, as a necessary corollary, that the capillaries are nourished and animated, like the rest of the vascular system, by vessels still more minute, and by nerves so excessively delicate as to elude even the most powerful microscope."

Prof. Gross' conclusions as to the structure of the parietes of the capillaries have been confirmed by actual observation. In the 877th page of Muller's Elements of Physiology, received in this country since the preparation of the Professor's work, it is stated that by the aid of a high magnifying power, Dr. Schwann has distinguished delicate and indistinct *transverse* fibres in the parietes of the smallest arteries of the mesentery of the frog, and that even the *capillary* vessels of the same part have similar fibres; "a fact," says Muller, "which decides the question, as to capillaries having distinct parietes." Dr. Baly, the London translator, adds that "these *circular* fibres are arranged as in *arteries*. It is necessary to employ a high magnifying power, and rather a feeble light; but they may be seen in the dead, as well as the living frog." In our reasonings, then, upon the influence of agents and on the functions and morbid states of the capillaries, we must be guided analogically by observations made on visible arteries.

Before dismissing this chapter of our author's work, it will be but justice to him and to our readers, to furnish them with an extended extract, that they may judge for themselves of his manner, and this we shall do without comment:

"The very first step in the process of inflammation is an altered sensibility of the part, produced by some hurtful agent, which the system makes an effort to dislodge. To effect this, the local impression is reflected upon the cerebro-spinal axis, and through this again upon the heart, which being sympathetically incited to increased action, more blood flows to the part concerned than it is accustomed

to receive, at the same time that the capillaries are perceptibly dilated. Those who maintain that the capillaries possess an inherent contractility, by virtue of which they aid in the circulation, will probably feel disposed to deny the agency of the heart in bringing about this preternatural determination of blood; to such I will only say, that if they will carefully study the subject, they will arrive at a different conclusion. That these vessels do contract and dilate, no one will dispute; for the experiments of Hunter, Wilson Philip, Thompson, Hastings, and other writers, have fully decided this point; all that I contend for is, that the capillaries have no vermicular movement, and therefore they are incapable of carrying on the circulation without the direct influence of the heart. In the inceptive stage of inflammation, this sympathetic action of the heart is no doubt so slight as frequently to escape the attention of the observer: as the disease progresses, it assumes a more distinct character, and can always be easily recognized.

"The phenomena above alluded to, namely, the preternatural influx of blood and the dilatation of the capillaries, can be easily detected by exciting irritation in the mesentery of a rabbit, the tail of a tadpole, the fin of a fish, or the web of a frog's foot, parts which are perfectly transparent, and therefore well calculated for the purpose. On viewing these structures with a microscope, in the sound state, numerous channels will be observed filled with blood, the red globules of which roll along in the most regular and beautiful order. If they be now irritated with spirits of wine, hot water, or diluted acid, the little rivulets just referred to will be found to become dilated, from the manner in which the blood is crowded into them by the heart, which in order to remove the local difficulty, is excited into sympathetic action. In a few minutes hundreds of vessels, which were previously invisible, will be seen shooting out in different directions, and connecting themselves with the sides of those that appeared in the first instance. These are not new channels, but old ones appertaining to the second class of capillaries, which are rendered evident by the intromission of red particles, which are either excluded in the healthy state, or pass along them in so slow and gradual a manner as to elude the eye of the beholder. The little bodies which are thus introduced do not circulate, at first, with the same facility as in the other parts of the body; for, as the dilatation of the little rivulets takes place by degrees, they have to force their way, and hence, after having advanced a short distance, they retreat slightly immediately after each pulsation of the heart, rebounding, as it were, upon each other. In this manner they travel on, surmounting every obstacle, until they finally reach the corresponding capillary veins, into which, as they are considerably more capacious, they rush, as into a vortex. Such are the initial steps of inflammation. If the process be now checked by the removal of the exciting cause, the phenomena referred to gradually disappear, and the part recovers its natural tone and condition.

"If, on the other hand, the inflammation be allowed to proceed, another series of changes may be witnessed, surpassing, if possible, in point of interest, those we have just described. The circulation now completely ceases, the blood assumes a dark modena color, and the coats of the vessels are rendered so soft as to be liable to give way on the slightest force. With these alterations the healthy functions of the part are suspended: it is red, hot, painful, and tumid; and its molecular intervals are filled with serosity or coagulating lymph. In this stage of the malady, the capillaries contain thick, viscid, partially clotted blood, which adheres with great tenacity to their inner surface, and opposes an effectual barrier to artificial injection, or to the removal of the fluid by pressure or ablution. In violent cases the blood escapes from the diseased vessels, and, forcing its way along the cellular tissue, forms new channels, through which it afterwards continues to circulate. This interesting phenomenon, which has been frequently noticed by Kaltenbrunner in the inflamed mesentery of the rabbit, is strictly analogous to what occurs in the organization of adventitious membranes,—a subject to which the attention of the reader will be subsequently directed.

"Inflammation, it will thus be seen, is a gradual process, which is preceded and accompanied by certain stages. Of these, three are recognized by Kaltenbrunner. The first he denominates the stage of incubation; the second, the stage of congestion; the third, the stage of inflammation, properly so called. Each of these is characterized by particular phenomena, the most important of which have been already described, in the order, as nearly as may be, in which they appear. To this arrangement I can see no special objection: it should be recollected, however, that it is altogether artificial, and that the stages which it recognizes are frequently so blended as to render it impossible to distinguish them from one another. Contrary to what might be inferred from analogy, Kaltenbrunner has ascertained the singular fact, that more time is usually required for inflammation to be developed in highly vascular organs, as the lungs and peritonæum, than in parts in which the circulation is more tardy and less perfect, as the liver and kidney. It is worthy of remark, however, that when the disease is once fairly established, it progresses much more rapidly in the former than in the latter of these structures.

"Another striking phenomenon is the distended condition of the larger vessels leading to the inflamed part. When the disease is at its height, the congestion often extends to a considerable distance; the blood is unnaturally dark, thick, and viscid, and artificial injection is difficult, sometimes impracticable. It has been alleged that the larger arteries in the immediate neighborhood of the lesion occasionally pulsate with preternatural force and frequency; but this is an assertion which is unsupported by proof, and which is, moreover, in direct opposition with every principle of physiology. The intensity of the morbid action is generally greatest at the centre of the

inflamed part, from which it is gradually, and, in some instances, suddenly diminished, until it loses itself in the circumjacent textures."

Chapter II treats of the effusions of serum. These are among the earliest and most constant of the effects of inflammation. Indeed, we may presume, that in all cases of inflammation, whatever other matters may at length or ultimately be poured out, serum more or less changed in its constitution, is the first secretion. Being a proximate effect of the vascular turgescence which it no doubt operates to diminish, we may regard its secretion, as one of the modes in wbich the cure by *resolution* is effected. At least many such cases must of necessity be confounded with those in which the inflammation is said to be discussed. When seated in certain parts of the body, this mode of termination is harmless, as the effused fluid may not much derange the functions of the organ, and will be soon absorbed; but in others, as the pericardium and ventricles of the brain, its presence is of serious import.

Under this head professor Gross has sought for aid to his favorite hypothesis, that all morbid secretions are the effect of inflammation. We shall let him speak for himself.

"It has been already hinted that serous effusion is the result of inflammation, usually of a very mild grade. That this is true, as a general rule, very few will attempt to dispute; the exceptions, if there be any, are certainly very rare, and have not hitherto been satisfactorily pointed out. A few facts, clearly and concisely stated, will assist in determining this problem.

"It has been alleged, in the first place, that serum is occasionally effused when there is an obstacle simply in the circulation, without any concomitant inflammatory action. It is a matter of common observation with the physician, that anasarca of the lower extremities often arises from obliteration of the femoral, external iliac, and ascending hollow vein; and the face, neck, and arms are frequently loaded with serum from compression of the vessels whose duty it is to return the blood to the right side of the heart. When the portal vein, or any one of its principal branches, is obstructed, abdominal dropsy, or ascites, follows. Contraction of the right auriculo-ventricular orifice, or disease of the valves of the pulmonary artery,

impeding the passage of the blood, and compelling it to regurgitate into the inferior cava, produces the same result, together with œdema of the legs and feet. These examples will be sufficient for the subject which they are intended to illustrate. Let us now endeavor to ascertain how far they are dependent upon inflammation, or whether they are the result merely of mechanical obstruction? It is frequently extremely difficult to ascertain the condition of the seat of the effusion by anatomical inspection. In ascites how often does it not happen that there is the most copious accumulation of water, caused obviously by inflammation! and yet, on examination after death, there is scarcely a well-marked trace of the latter malady. That there are cases, then, of serous effusions, in which the ordinary phenomena of phlegmasia, particularly the discoloration, entirely vanish on the approach of death, or during the last struggles of life, cannot be doubted; indeed, it is not improbable, I think, that there are instances in which this disposition occurs a long time before the individual expires. The absence of redness, therefore, does not prove that there was no inflammation; for the existence of this lesion is sufficiently evinced by the presence of the watery accumulation, and the opacity of the affected membrane. Should there be, in addition, specks, patches, or bands of fibrin, all doubt on the subject must vanish.

"Such, then, being the difficulty of recognizing the presence of inflammation, where every symptom during life gives indubitable evidence of its existence, can it be wondered at that, in the instances above referred to, pathologists should still consider the effusion of serum as the result merely of mechanical obstruction? The question may now be asked,—can such an obstruction exist, to any considerable extent, without producing a state of parts analogous to, if not really identical with, inflammation? I would answer, no. Let it be supposed that the obstacle exists in the ascending hollow vein. This vessel is destined to return the blood from the inferior extremities, the pelvis and abdomen, to the right side of the heart. But, failing in the accomplishment of this object, from the difficulty adverted to, the blood is interrupted in its passage upwards, and congestion of all the vessels, both large and small, is the result. This congestion is not transient, but permanent; and it is scarcely reasonable to presume, judging from our knowledge of the circulation, that this state could exist long without producing an altered condition of the sensibility of the parts affected, attended with more or less redness, and effusion of serosity. The peritonæum and cellular tissue of the limbs are the structures which receive the brunt of the difficulty, and these are parts, it is well known, which are most liberally supplied with serous capillaries. But, it may be said that the effusion may result from perverted action, from irritation, or disturbed function: all this may be true, and yet not in the least invalidate our position. Every body knows that in inflammation there is perverted action, or deranged function, with irritation, or altered sensi-

bility. These terms, therefore, if they mean any thing at all, only denote certain conditions—not the cause of these conditions; as redness, heat, pain, and turgescence are not inflammation, but only so many symptoms of it.

"The preceding remarks are equally applicable to the watery effusions of the serous textures, which occur in association with organic diseases of the glandular and parenchymatous viscera. A large scirrhous tumor of the liver, seated so superficially as to encroach upon and fret its serous investment, is often attended with ascites, although the portal circulation is in no wise obstructed or embarrassed. In the same manner hydrothorax is sometimes induced by tubercles of the lungs; hydrocele by carcinoma of the testicle; hydrocephalus by heterologous growths of the brain. In all these instances the effusion of water is the result, unquestionably, of inflammation, lighted up in the serous covering of the respective organs, by the morbid deposit acting in the capacity of a foreign substance. The dropsical accumulations which supervene upon scarlet fever, measles, and other eruptive diseases, can be traced, in most cases, directly to phlegmasial irritation of the serous membranes.

"Taking into consideration the preceding facts, and the reasoning founded upon them, the conclusion is obvious that the effusion of serosity, no matter in what part, organ, or region it occurs, is the result, *invariably*, of a process analagous to, if not strictly identical with, inflammation. This process, we repeat, is often very imperfectly marked, both during life and after death, so that the ordinary phenomena of phlegmasia are in no way manifest to our senses. That this conclusion is fully borne out by the premises, is, I think, sufficiently evident; and we shall, therefore, dismiss the subject, in the hope that what has been stated will have a tendency, at least, to arouse the attention of the profession to further investigation respecting it."

On this able and interesting extract, we shall make but one or two passing remarks. Our author insists, that the various effusions to which it refers, are the "result *invariably* of a process *analagous* to, if not identical with inflammation." With this modification of his doctrine we are content to receive it. The analogy may extend as far as congestion and increased serous secretion, are concerned; but congestion is not inflammation. It is, moreover, by no means certain, that all cases of increased serous effusion, are preceded by congestion, for the secretion may itself prevent, seeing that it can

cure congestion. It remains to be shown, that we cannot have increased serous secretion without congestion. A secreting surface when it pours out more than its usual quantity, doubtless receives more than its usual portion of blood, in a given time; but it does not follow, that the capillaries become engorged.

The third chapter treats of effusions of coagulable lymph, to which our author has with propriety applied the term *lymphization*. These are the sources of nearly all the analogous formations, and their study is of the deepest interest to the surgeon and physician. Coagulable lymph, we regard with our author, as exclusively the product of inflammation.

"With the appearance of this substance, every one is familiar. In the majority of instances, it is of a light opaline cast; in others, it is of a pale color, cineritious, of a milky white, or reddish, from the admixture of hœmatorine. When first deposited, it is soft, fluid, and somewhat ropy, allowing itself to be drawn out into little filaments: after a while, however, as its watery particles are being removed, it assumes greater consistence, and is finally converted, in many cases, into firm, dense structure, having all the attributes of the cellular tissue, fibrous membrane, or even cartilage and bone. The period required for these transformations varies from a few weeks to as many months."

The coagulable lymph must not be confounded with the fibrin of the blood, which is but one of its elements—howbeit the most important—for the albumen of the serum enters likewise into its composition. It is, indeed, a secretion not merely in the sense of something extravasated from the vessels, but in the more legitimate sense, of something formed out of the blood and discharged from the capillaries. To its production the red globules *may* also contribute, and, perhaps, to their presence, altered it is true, and made to harmonize with the other altered elements of that fluid, may be

ascribed the spontaneous or independent formation of blood in the effused lymph.

Fibrin, as constituting a false tissue or formation, is found in certain cases of sanguineous extravasations into the cellular membrane or upon the serous surfaces, or when the currents of circulation have been arrested in sections of vessels. Under such circumstances, the fibrin coagulates, the coloring matter is decomposed, and the serum absorbed. An adhesion takes place between the coagulated fibrin and the adjoining surfaces, and, finally, the former receives vessels from the latter. This adhesion is brought about, according to our author, by inflammation, excited in the normal surfaces, by the irritation of coagulum; but Carswell and other pathologists, regard it, and we believe justly, as identical with the adhesion of cardiac polypi to the columnæ carneæ, a mode in which it is probable vegetations of the valves of the heart are formed. Thus the distinguished anatomist whom we have just mentioned, has established two genera of analagous formations—one from coagulable lymph, the other from fibrin; but our author admits only the latter; or, to speak more accurately, regards the concurrence of the former, as essential to the union of the latter with the living textures.

The analagous tissues which our author admits, are the cellular—serous— mucous — cutaneous — vascular, including the erectile—adipous—horny, including the cuticle, hair and nails—fibrous—cartilaginous—cartilaginous and osseous; each of which will be considered in connexion with its archetype in the healthy system.

Lymphization is nature's standing prescription for a great variety of lesions. By it incised wounds are immediately healed, cut arteries closed, and lacerated wounds, attended

necessarily with sloughing, filled up; broken bones are reunited, and necrosed bones replaced; the diffusion of pus restrained; tubercular cavities occasionally walled; the fatal effects of intestinal mortification and sloughing averted; aneurismal arteries obliterated; great surgical operations rendered admissible, and the stumps of amputated limbs speedily healed! On the well-known but absurd aversion of French surgery to the last, our author has the following merited criticism:

"Much good has also resulted in respect to the treatment of incised wounds, whether produced by accident, by the removal of a tumor, or the amputation of a limb. In all these instances it is customary, in every part of the civilized world, with the exception, perhaps, of France, to endeavor, if possible, to bring about union by the first intention; the surgeon well knowing that if this can be effected he will save himself much trouble, and the patient no little suffering and inconvenience. When we reflect upon this subject, it is extremely difficult to account for the great apathy and silly hesitancy which the Parisian practitioners exhibit, with regard to this plan of treatment, about the propriety of which there ought to be but one opinion. In this respect they certainly are fifty years behind the present state of the science,—a circumstance which is so much the more surprising, when it is recollected that they have decidedly the best schools of pathology in the world."

But good and evil are associated, and while lymphization brings us so much of the former, it imposes not a little of the latter. The adhesive and plastic character of lymph, and its long continued contraction or shrinking up, are the sources of these difficulties. Thus, after an extensive loss of skin by sloughing from fire, the new textures often produce deformity, and sometimes an inconvenience which no surgical operation can obviate; again in inflammations of the cheek, adhesions and indurations compress the jaws against each other; from the same cause, the eye-lid becomes agglutinated to the ball; the larynx fatally obstructed with false membrane; the urethra nearly closed up: the intestines combined into a

great bundle; the lungs and pleura cemented to each other; and the solid viscera compressed till they fall into atrophy.

What then can be of deeper interest to the physician and surgeon, than the study of lymphization! How important to know the means of promoting it when necessary, and of averting it when and where it would be mischievous!

Our author next treats of suppuration. He adopts and enforces the sound doctrine that *the formation of pus in whatever part of the body occurring, is the result of inflammatory action, either acute or chronic, simple or specific.* Some of the large and cold abscesses are the offspring of very chronic inflammation—others no doubt are but collections of pus secreted in an inflamed part, absorbed and subsequently deposited in another. Pus may be formed without any solution of continuity. This happens especially in the lungs and their investing membranes. Purulent expectoration without ulceration is not very uncommon, and empyema is a collection of pus in the cavity of the pleura, not, we presume, the consequence of ulceration. We have met with two cases in which the quantity was so great, as to indicate secretion from an extensive surface, and the recovery after paracentisis so rapid and perfect, as almost to demonstrate, that the pleura could not have been the seat of ulcerative absorption, or the subserous tissue the bed of an abscess.

"Pus, when first effused, generally appears in the form of distinct globules, which are dispersed through the affected structure, and can be easily recognized by their pale yellowish color. As the purulent particles increase in number, they gradually become confluent by the absorption of the part concerned, and in this way the matter is at length collected into an abscess."

The account here given varies somewhat from the reports of several other observers. Autenrieth affirms, that if some of the watery moisture, which exudes from the surface of an

inflamed part after the pus has been removed, is collected between two transparent thin plates of tale and allowed to lie in the wound, globules are seen to form gradually in it, to enlarge and become opaqe, while if the fluid is removed altogether from the atmosphere of the living textures, no such change takes place in it. Brugman, also, states that if a supurating surface has been washed clean, the pus is seen to be secreted as a clean fluid, which afterwards become thick and opaque.—Muller Elem. Phys. 469.

The experiments of Gendrin have shown, that pus is formed out of *all* the elements of the blood. He has seen that fluid when extravasated gradually transformed into pus. To this end, however, it must be lodged in the midst of an inflamed tissue.

An attentive study of the characters of pus is essential to the surgeon. These characters will sometimes indicate to him the tissue affected, and very commonly the state of the secreting surface—sometimes even that of the constitution.

Pus is very often imbued with a specific quality—syphilitic, variolous, gonorrhœal, &c., which does not seem to modify its sensible properties. It would be interesting to ascertain, whether the pus which might be secreted under an accidental solution of continuity, in the vicinity of a chancre, or in the midst of variolous pustules would possess a specific character.

But we must turn aside, and bring this extended, perhaps tedious review to a close. There remain many other subjects to be discussed, which we shall make the topics of other articles. Having completed the division of *general* pathological anatomy, we shall from time to time indulge ourselves in the presentation of some of the leading facts touching the morbid anatomy of *particular* organs, connecting them with pathological speculations, and occasional therapeutic remarks.

The high estimate we place on Professor Gross' work may be inferred from the copious presentation we have made of a part of its contents in this article, not less than the intimation we have just given in regard to what remains. If we are not greatly mistaken, its publication will give to the study of pathological anatomy in the United States, and especially in the west and south, where the author is extensively and advantageously known, a decided impulse. The work bears intrinsic evidence of varied and patient research; and while the author has availed himself of nearly all the standard works of Europe, he has not neglected to bring forward the rich results of his own experience. For some time called upon by a large proportion of his brethren in the city where he lives, to make *post mortem* inspections for them, we know his opportunities to have been greatly multiplied; and have often had occasion to mark his accuracy and minuteness. For *our* surgeons and physicians, we regard his work as decidedly superior to that of Andral. That distinguished pathologist, it is well known, reserved his practical remarks for his *Clinique Medicale*, scarcely ever met with in this country; but Professor Gross has sought to connect his with the different pathological appearances which it has been his duty to describe. Moreover, he has given us the morbid anatomy produced by our *own* diseases; and an unusually large proportion of his cases have been in private instead of hospital practice, all of which is calculated to give his facts a special application to western practice.

D.

THE WESTERN JOURNAL.

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DR. BALLARD'S CASE OF EXTIRPATED UTERUS.

We published in the June number of this Journal a brief notice of a remarkable case of forcible removal of the uterus by a midwife, which fell under the observation and treatment of Dr. Ballard, then of Westport, Kentucky, now of Indiana. Our notice has elicited from the Dr. a more circumstantial and authentic account of the case, which we take pleasure in laying before our readers, believing that it will be highly gratifying to them, as it was to us. The promptitude and vigour with which the inflammatory symptoms were met, and the rescue of the unfortunate sufferer from death after so serious a lesion, reflect great credit upon the skill of Dr. Ballard.

H. M.

Sir—I have just perused, in the June number of the Western Journal of Medicine and Surgery, a notice of a case of forcible removal of the uterus and its appendages after the expulsion of the fœtus, which occurred in Oldham county, Kentucky, communicated

to you by my friend, Doctor Drane, which subsequently fell under my care. It was a case novel in its character, and worthy of being reported, and I intended to give it to the profession, and accordingly noted all the symptoms as they occurred at the time, with the minutiæ of medication, the character of the secretions, excretions, etc. But unfortunately my memorandum was destroyed by fire, some years since, and consequently I am unable, at this late period, to present the case to you in detail, as I am obliged to depend altogether upon memory.

This case so far as my reading extends is unique. It occurred about the 20th or 22d of June, 1828, in remarkably hot weather, the mercury ranging from 90° to 100° of Fah. The subject was thirty-two years of age and very corpulent. I saw her about 3 o'clock, P. M. Her breathing was short, difficult, and hurried; her pulse small, quick and thread-like; skin covered with perspiration; she complained of a sense of suffocation, but the hæmorrhage at the time was trifling. I gave her sixty drops of tincture opii which operated like a charm, her breathing becoming comparatively easy in a few minutes, and her pulse more slow, soft, and free from irritation. After she had rested for an hour or two upon the feather-bed on which I found her, she was removed to one of straw, placed in a position to admit a free circulation of air.

About two hours after my arrival my patient became troubled with flatus in the stomach, of which she was relieved by a few grains of magnesia, and a little essence of peppermint. She slept some that night and appeared quite comfortable in the morning. The excessive perspiration had entirely subsided, but her skin was neither hot nor dry. I now directed an ounce of sulph. magnes. to be given every three hours until catharsis should be established, and cloths wet in cold water to be applied over the abdomen, so soon as the temperature of that region should rise above the natural standard. I then left her with a promise to return at 4 o'clock, P. M.

The salts I found had produced no effect, nor were there yet developed any symptoms of inflammation—no soreness, no increase of temperature—the patient free from pain and comfortable. She was ordered to continue the sulph. magnes.

It was now twenty-eight hours since the violence had been done, and I expected inflammation to supervene before morning, and in this I was not mistaken. About 12 o'clock I was summoned in

haste; found my patient complaining of great pain and soreness in the abdomen, especially above the arch of the pubis; pulse full, strong and bounding; skin hot and dry. No action had been produced by the medicine upon the bowels. I immediately from a large orifice took thirty-six ounces of blood from the arm. Her pulse sunk, and she grew faint. An enema was administered which produced three or four copious discharges from the bowels, which, with the bleeding, relieved completely both the pain and arterial excitement. I directed the cold applications to be rigidly attended to, and gave the following powder every two hours: tart. antimon. ¼ gr., nit. potas. 8 grs., pulv. camph. 2 grs. The patient rested well the remainder of the night, and her pulse was quiet, and her skin cool and moist at 5 o'clock, A. M. At 6 the inflammatory action had returned with all its force, and I again took thirty-six ounces of blood from the arm, with the former decided and happy effects.

4 o'clock, P. M., the powders and cold applications have been continued; patient has taken a few spoonfuls of rice water; bowels have been moved three or four times; she had rested well until 3 o'clock, when slight arterial excitement came on, accompanied by a corresponding increase of pain and soreness in the abdomen, but the abstraction of twelve ounces of blood was sufficient to arrest it, and it returned no more. *Morning of the third day.*—Patient free from pain, pulse soft, skin moist, kidneys acting freely, tongue clean. She has had three or four copious dejections from the bowels during the night without any diminution of muscular strength. The antimonial to be continued.

The patient enjoyed from this time an uninterrupted convalescence, and although she continued to take the powders every two hours, for ten or twelve days, and had from six to ten discharges from the bowels every twenty-four hours, she experienced neither nausea nor prostration from their action. During this period the only nutriment she was permitted to take, was six or eight tablespoonfuls of rice water in the twenty-four hours. No secondary hœmorrhage occurred. When the sloughing stage came on, which was well marked by strong fœtor, followed by a moderate purulent discharge, an opposite treatment was observed; and under this she rapidly recovered, and has enjoyed good health, so far as I know, ever since. In this case, there was no lochial discharge, nor was lactation established; shewing the controlling influence of the uterus over this important secretion. Another interesting physiologi-

cal fact.—Inquiries instituted two years after the recovery of my patient convinced me, that the accident had not entirely deprived her of sexual propensities: yet both the ovaria were removed with the uterus.

July, 1840. C. G. BALLARD.

MEDICINE IN PARIS.—TROUSSEAU ON IRON.

Professor Trousseau, it appears from the subjoined letter from Dr. Linton, is reviving an old practice with much success in the great emporium of the Medical Sciences. We have had a good deal of experience in the use of iron in dropsy, amenorrhœa, and intermittent fever, and could cite some striking cases of cure confirmatory of the views of the French Professor. Intermittent fever is a common complaint in this city, and it is well known that it is apt to recur in the spring after having attacked an individual the preceding autumn. Such cases are often exceedingly obstinate, chills continuing often to return at longer or shorter intervals until mid-summer. The appearance of the patients is strongly anæmic. For three summers past we have been in the habit of prescribing carbonate of iron for such cases, conjoined with an infusion of the bark of the wild cherry tree—of the former, five grains, in a pill, before each meal, and of the latter, as much as the patient is inclined to drink. In some instances, the iron alone has been used with the desired effect, and will generally prove, we think, in these chronic cases of intermittent fever, a much more efficacious remedy than sulphate of quinine. In the complaints of females, iron was in the highest repute with physicians of a former century. Hoffman relates, that he frequently gave it with remarkable success in obstinate chlorotic cases accompanied with excessive headaches and other violent symptoms. He usually joined with it an alkali, and some vegetable bitter or aromatic. Y.

Paris, May, 1840.

Dear Sir:—I propose, in the present letter, as I promised in my last, to give you a summary of the lectures of Prof. Trousseau on iron. He remarked that in the blood of women and children this metal exists in a less quantity than in that of man—that it is an

ingredient necessary to the health and plasticity of that fluid—that without it the blood is thin, uncoagulable, and incapable of nourishing the organs, or stimulating them to the performance of their functions; and that, in addition to the fact, that this state of things, *anemia*, is more common in women and children than in men, the impoverished state of the fluids, in the latter, when it does exist, depends more upon other causes than upon the loss of the ferruginous principle in the blood. Hence iron is peculiarly a medicine for women and children. In chlorosis, the principal element of which is anemia, or the state above alluded to, this medicine is the sheet anchor. The soluble or the insoluble preparations are to be used according to circumstances. If, for example, the patient be subject to uterine and other hemorrhages, which are often consequent upon a thin and dissolved state of the blood, the soluble forms are to be preferred, because of their directly styptic, in addition to their tonic action—otherwise, the insoluble preparations of the medicine will answer better, as the *carbonas* or *limatura ferri*. This latter, iron filings, he thinks, will subserve most of the objects of administration of iron. The mode of administration is also a matter of importance. It should be taken with the meals of the patient, or just before them—the best of all modes being to incorporate it with the bread. A sufficient quantity may be thus taken without affecting disagreeably the taste of this article of food. This method is especially adapted to anemic children. The dose should at first be small, especially if the stomach does not seem to tolerate the medicine; but should be gradually increased to 20 or 30 grains, for adults—for children proportionably less.

One of the principal faults, Professor T. remarked, in the treatment of anemic affections, consists in leaving off the medication too soon. It should be continued long after the countenance has assumed its wonted color, and the functions their accustomed energy. The disease being chronic demands a chronic course of treatment—a remark applicable to most affections.

The ordinary symptoms of chlorosis, besides the exsanguineous and pale surface, and general debility, are derangements in the menstrual functions—sometimes hemorrhage, sometimes the reverse—a variable appetite, frequently an entire absence of any disposition for food—costive bowels, alternated with diarrhœa—neuralgia, and various other nervous affections.

All these disagreeable symptoms, says the Professor, may be combatted by appropriate means, while the iron is doing the slow but certain work of curing the pathological state in which the disease more essentially consists. For example, an opiate may be given, or the extract of belladonna may be rubbed on the gums, to quiet the neuralgia, which generally affects the nerves of the face; a little aloes may be combined with the iron to remove constipation; or some astringent, when there is diarrhœa, and when there is great want of appetite, the extract of gentian is a valuable adjunct to the metal preparation.

For the preparations of iron to be successful in any disease, it is the opinion of the Professor, that the disease should be dependent on, or closely connected with, anemia. Many physicians, said he, have boasted of the powers of this article in neuralgia, and have published numerous cases in which it has triumphed; but it cures this painful affection *only*, he maintains, when it is connected with an impoverished state of the blood; you will find, gentlemen, said he, in consulting the statistics of this subject, that most of the cases reported as having been cured by this remedy, have been those of anemic women.

Amenorrhœa is a diseased condition which depends upon opposite states of the system, and consequently iron cannot be said to be its specific. It sometimes depends upon a phlogistic and plethoric habit, and in such cases this medicine is by no means to be resorted to. In a word, it is only when connected with anemia, that amenorrhœa calls for this therapeutic agent. The same remark may be made in reference to dysmenorrhœa—it is very common in this affection, said the Professor, for the physician to advise marriage. This is bad advice when given to those whose diseased state is associated with anemia. In such cases, the disease should be cured before marriage. When, however, the habit is plethoric, and the organs generally in a comparatively healthy exercise of their functions, marriage will be found advantageous.

There are no better remedies than the preparations of iron in dropsies dependent on an impoverished condition of the circulating fluids. Every one who has had the opportunity of observing knows, that the thin and dissolved state of the blood which obtains in intermittents and other fevers, predisposes to congestions, hemorrhages, and dropsical infiltrations. The timely administration of iron

will most generally prevent these dangerous sequelæ, and is their best remedy when they have unfortunately supervened.

It will thus be seen, that though the Professor does not regard iron as a specific in any given disease, he attributes to it the power of controlling an important pathological state which is the cause of a great many morbid phenomena, and which enters as a principal element into many obstinate and complicated affections.

I am disposed to think that Professor Trousseau is not much tinctured with the skepticism so prevalent in Paris, with regard to the powers of medicine. He talks like a good English or American practitioner—a comparison, however, which would not be regarded as complimentary by a Frenchman. M. L. L.

Paris, May 20, 1840.

MEDICINAL PROPERTIES OF THE COTTON PLANT.

We are not aware that the cotton plant, (*Gossypium herbaceum,*) so extensively cultivated in the South for its economical uses, has found a place in the Materia Medica, and should, therefore, probably have remained ignorant of its claims to such distinction, had not our attention been drawn to the subject by a letter from E. F. Bouchelle, M. D., of Columbus, Miss. to Prof. Short. According to the observations of Dr. Bouchelle, the cotton plant displays a particular affinity for the female sexual organs, and is capable of modifying their functions in a remarkable manner. He has exhibited it as a remedy in amenorrhea with decided benefit, five cases of which are mentioned by him, but in terms too general to be satisfactory. He seems to regard it as a specific for this form of catamenial derangement, since he expressly states that it is applicable to every case without regard to the state of the system.

But it is as an oxytocic that the article is most celebrated by Dr. Bouchelle, since in his hands it has proved itself to be nowise inferior to the secale cornutum. He has administered it in several cases of labor, when his hopes of a favorable issue were gloomy indeed, and in every instance he was forcibly impressed with its benignantly specific influence upon the parturient action of the uterus. He has given it *experimentally*, also, in cases of natural labor, and with equally satisfactory results. In such cases, he will allow

us to suggest, the remedy maintained a strict neutrality, else it could scarcely have failed to do mischief. In natural labor, the expulsive contractions are justly proportioned, both as to intensity and frequency of recurrence, to the obstacle to be overcome, and they cannot be accelerated or strengthened without risk of injury to both mother and child. Dr. Bouchelle assures us that the cotton plant not only possesses the property of invigorating feeble contractions of the uterine fibres, but that it *originates* expulsive contraction at any period of gestation, and will induce *immediate* abortion when taken in the proper quantity. Should future trials confirm this observation, the gossypium will be entitled to a higher rank as an oxytocic than the secale cornutum, for, it is questionable whether the latter exercises such sway over uterine contraction; at least, we have no satisfactory evidence that it is capable of exciting abortion in a passive and healthy state of the uterus. Dr. Bouchelle avers, however, that the cotton plant is habitually resorted to by slaves in the South for the criminal purpose of inducing abortion, and that it is a fact long and well known in that region that two-thirds, at least, of the likeliest and youngest female slaves are either sterile or invariably miscarry when they do become pregnant, from which he infers, furthermore, that the use of the article destroys the generative capacity. He mentions as a remarkable fact, (and it strikes us in that light too,) that those who resort to it either with the view of inducing abortion or of destroying the generative capacity, experience no detriment to their health therefrom.

The preparation used by Dr. Bouchelle is a decoction made by boiling four ounce of the inner bark of the root in a quart of water until it is reduced to a pint. Dose, a wine-glassful every twenty or thirty minutes as an oxytocic; he does not specify the dose, &c., in amenorrhœa. H. M.